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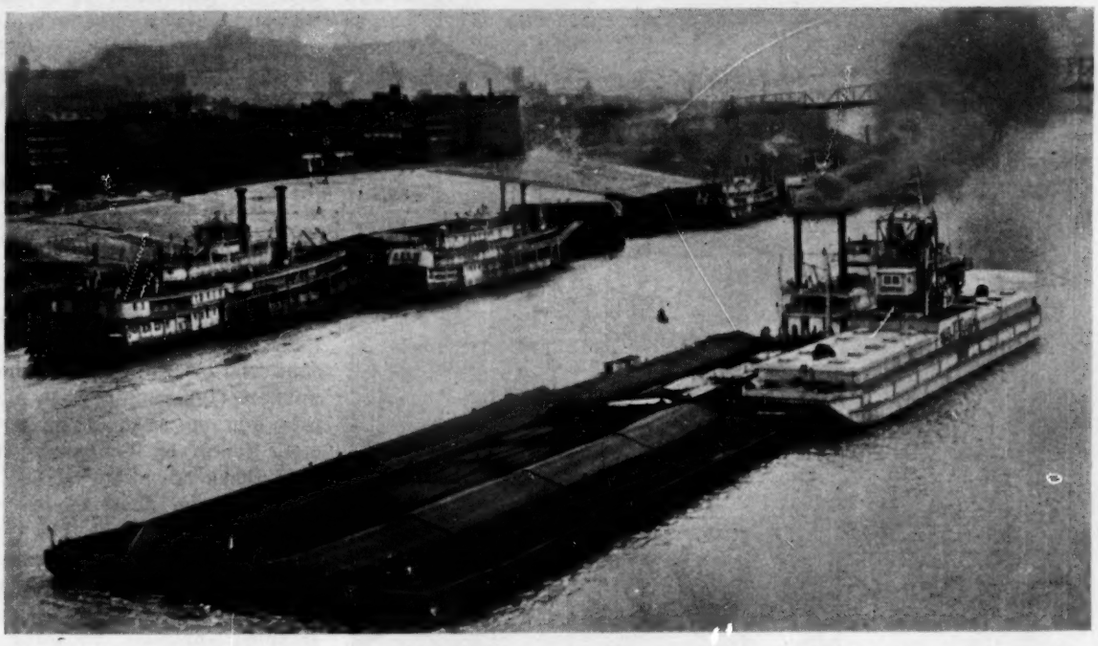


First tow of steel products down the Ohio and Mississippi rivers, in October, 1921, by Jones & Laughlin barges

Seeking To Build Up Adequate Shipping Facilities on Ohio River

By W. G. Gude

Associate Editor, Iron Trade Review

IRON and steel products are the leading items in the through movement of freight by water from Pittsburgh to the South and Southwest. The freight movement over the Ohio river in recent years has exceeded 20,000,000 tons annually, while shipments over the Monongahela river, a tributary, have been in excess of 25,000,000 tons. Traffic in coal, sand and gravel comprises 85 per cent of the total freight of these two streams, but these commodities are moved over comparatively short distances.

Work on the slackening of the Ohio river practically is completed, and the 900 miles of this stream from Pittsburgh to Cairo, Ill., are available for year-round movement of a variety of freight. Considerable expansion remains to be done to establish transportation facilities that will extend to the small and large shippers the benefits of a dependable river route. Included in such developments, proponents of wide-scale utilization of the Ohio maintain, is the establishment of joint rail and river rates and equitable divisions of revenue between all-rail carriers and barge lines having river-rail terminals. Progress along these lines is getting under way gradually.

It is not to be inferred, however, that traffic

of freight over the Ohio already is not of considerable proportions. In the Pittsburgh harbor alone are some 89 steamboats, 60 smaller towboats, 2000 barges, 24 sand dredges and 10 dipper dredges.

The bulk of river traffic in the Pittsburgh district is accounted for by plants located along the banks of the Monongahela, Ohio and Allegheny rivers, and is carried on largely by private lines. Coal, which constitutes the most active commodity, is moved in large tonnages from mines to the various steel mills. Coal shipments over the Monongahela river alone, between Fairmount, W. Va., and Pittsburgh, a distance of 127 miles, amount to more than 20,000,000 tons annually. Coal traffic over the Ohio river as far as 96 miles from Pittsburgh approximates 5,000,000 tons. The annual movement of sand and gravel in the Pittsburgh district totals more than 6,000,000 tons, while about 2,400,000 tons of iron and steel are transported in a year.

River terminal of Carnegie Steel Co. at Munhall, Pa. Steel products and cement are handled mainly here. An underwharf chute is used to transfer cement from cars to barges

Several public carriers furnish regular service from the head of the Ohio to the South and West. The American Barge line and Union Barge line are the largest independent lines engaged in river traffic from Pittsburgh to the Mississippi and the Gulf. These lines furnish towboats for companies owning barges in addition to operating their own fleets of carriers. The former is the only line with regular service between Pittsburgh and New Orleans. This line operates 55 barges and boats. Barges of the American line include the covered and open or hopper type, tank barges for liquid cargo, and combination tank and cargo barges with capacities ranging from 400 to 1000 tons. The company recently placed an order with the Howard Shipyard & Dock Co., Jeffersonville, Ind., for the construction of four specially designed combination tank and cargo type barges to be used in the Pittsburgh and New Orleans trade. These barges will be capable of carrying steel and wire products, with a cargo of oil in the hold at the same time. The American line maintains a weekly shipment schedule of 6 to 14 barges from Pittsburgh to New Orleans. The trip of 2000 miles to the southern gulf port requires from 18 to 21 days, with a slightly longer time for the return journey, depending upon freight carried. Time of haul between other points, such as Cincinnati, Louisville, and St. Louis varies proportionately. Principal commodities hauled are manufactured iron and steel products, including tin plate, pipe, nails, wire, structural shapes and steel sheets, crude oil, creosote oil, tar, sugar, coffee and canned goods. The American Barge line operates a terminal at Glassport, Pa., on the Monongahela river, 17.5 miles above Pittsburgh, to which inland companies, notably the Bethlehem Steel Co., Johnstown, Pa., ship freight by rail for trans-shipment down the Ohio and Mississippi. This terminal is equipped with three 5-ton cranes for transferring material from freight cars to barges.

The Union Barge line operates a fleet of 27 barges and 5 steamboats between Pittsburgh and Memphis, making three trips a month. Six of these barges are of the closed type for transporting certain products that must be protected from the elements, such as petroleum, steel sheets and tin plate. This line recently made arrangements with the Jones & Laughlin Steel Corp. to handle the increased river transportation of this Pittsburgh steel producer, and will take one tow a month, consisting of ten barges carrying 10,000 tons, to various Ohio and Mississippi river points.

River traffic in and around Pittsburgh was heavy a number of years before regular transportation down the Ohio and Mississippi was instituted, and steel producers, coal, and sand and gravel operators have built up fleets for hauling their own products and on a small scale those of other concerns. Companies that long have taken advantage of the low cost transportation that the rivers offer in movement of bulk raw materials, such as coal and coke, to their Pittsburgh district plants, have been the leaders in utilizing barge service for shipping finished products to the South, West and Southwest.

Carnegie Operates Fleet

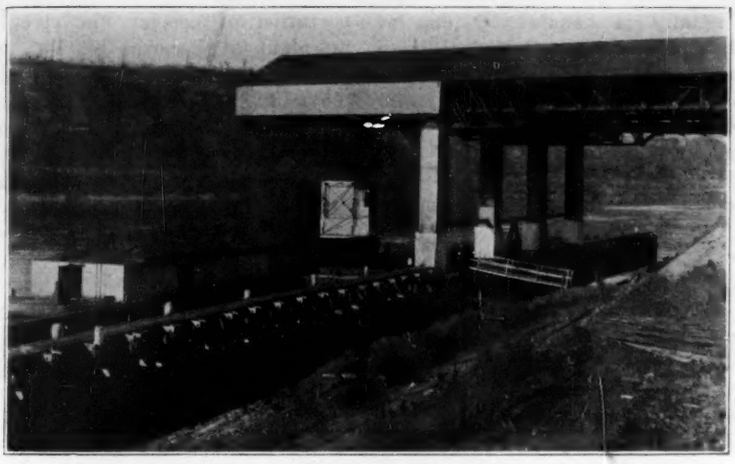
The river transportation service of the Carnegie Steel Co. came into existence as a transportation adjunct to the by-product coke plant at Clairton, Pa., the largest installation of its kind in existence. Coal is moved by barge from the mines to this plant and to river terminals for delivery in cars to plants on the rivers having no barge unloading facilities. Coke is delivered to furnace plants along the Ohio and Allegheny rivers. River service gradually was expanded and with the institution in 1922 of the hauling of finished steel products as far south as New Orleans, additional floating equipment was added to the fleet. The marine department of the Carnegie company now operates the largest fleet on inland rivers, following its recent merger with equipment of the American Steel & Wire Co., and in 1928 carried more than 13,500,000 tons on the Monongahela and Ohio rivers. The fleet consists of 15 stern wheel steamers and 450 steel barges. Of the latter, 423 are open top barges for carrying coal, coke, etc., 26 are cargo barges and 2 are acid barges. Coal barges have a capacity of 850 net

tons when loaded to 8½-foot draft. The company makes one trip each month from Pittsburgh to New Orleans and intermediate points, carrying finished products, and one trip per boat per day from Monongahela river coal mines to Clairton and Duquesne, Pa. Miscellaneous commodities are moved between mills along the Monongahela river and Ohio river plants at Bellaire and Mingo Junction, O., and the American Bridge Co. plant at Ambridge, Pa., including steel plates, shapes, bars, pig iron, ingot molds, flue dust, coke dust, scrap and stirring rods.

Terminals are operated at various plants and mines of the Carnegie and H. C. Frick Coke companies with facilities for handling the heavy traffic. At Clairton by-product coke plants, for instance, four double hoists, each having two 6-ton grab buckets, are used for unloading coal from barges. A conveyor loads coke from cars to barges and there is equipment for pumping acid from tank barges to the plant; also for loading creosote, oil or tar into tank barges.

Other Terminals Numerous

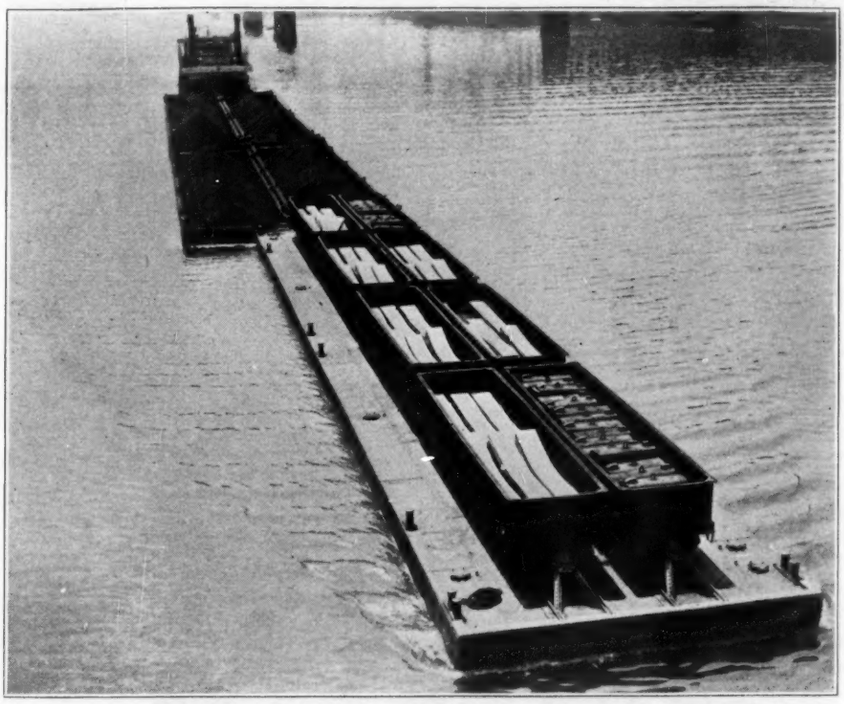
At Duquesne, Pa., a river terminal owned and operated by the Union railroad, a subsidiary of the United States Steel Corp., is equipped with five electrically-operated locomotive cranes, of 5-ton capacity each, with magnet or grab bucket as accessories. These are used for unloading coal or other bulk commodities from barges and are available in emergency for loading steel or other material for shipment by barge. A central wharf at Munhall, Pa., is a general terminal for all plants on the Union railroad and is available for handling material from other Carnegie plants outside of the Pittsburgh district or for use by other Steel corporation subsidiaries on outbound shipments. Equipment consists of a gantry crane, with double hoist of 15-ton total capacity and magnet and underwharf chutes for transferring cement from cars into barges. Additional terminals also are operated at both Clairton and Duquesne, at Bessemer, Pa., on the Monongahela river, at blast furnace plants in Pittsburgh and at the Pittsburgh north side plant at Etna, Pa., on the Allegheny river, and Mingo Junction and Bellaire, O., on the Ohio river. Several docks are operated in connection with coal mines near the Monongahela river, with belt conveyor systems employed to move the fuel to the barges. At the Colonial dock, 48 miles above Pittsburgh, coal is moved from mines located an average distance of 6 miles from the river, by a belt conveyor system from a central point. The longest conveyor belt in this system is 2439 feet, and it is the longest of the kind in the world.



American Barge Line terminal at Glassport, Pa., on the Monongahela river. Inland freight is trans-shipped here for river delivery

Jones & Laughlin Steel Corp., Pittsburgh, was the pioneer in development of the long haul to the West, South and Southwest, starting the first tow in 1921. This company now is shipping two tows of steel products monthly down the Ohio and Mississippi rivers—approximately 20,000 tons—for distribution to interior points by rail from its warehouses in Cincinnati, Memphis, St. Louis, New Orleans and other river ports. Through its subsidiary, the Vesta Coal Co., it operates 215 modern steel barges and eight towboats. Capacities of the barges vary from 450 to 900 tons, the latter being in the majority. Products carried are coal from the Vesta mines to the Jones & Laughlin mills and furnaces, and manufactured steel products from mills to customers in the South, West and Southwest by river and rail. Jones & Laughlin also operates a carferry between the Pittsburgh and Aliquippa, Pa., works, a distance of about 20 miles, for the transfer of railroad freight cars loaded with material in the process of manufacture.

Pittsburgh Steel Co. operates 50 barges and two steamboats, but only on short hauls of coal and coke. The longer movement of steel prod-



Carferry operated between the Pittsburgh and Aliquippa, Pa., plants of the Jones & Laughlin Steel Corp., for transfer of freight cars loaded with raw and semifinished material

ucts usually is handled by one of the independent lines. The Hillman Transportation Co. moves coal for the Hillman Coal & Coke Co. from mines for distribution to lower river points, operating a fleet of 70 steel barges and 4 tow boats. In 1928 the Hillman fleet carried 1,250,000 tons of coal. The Pittsburgh Coal Co. also operates a large fleet. Wheeling Steel Corp., through its subsidiary the La Belle Transportation Co., brings raw material to its plants in addition to shipping finished products to distributing centers. Weirton Steel Co., Weirton, W. Va., and McKeesport Tin Plate Co., McKeesport, Pa., are other steel manufacturers that move their products in river barges. Keystone Sand & Supply Co., Ohio River Sand Co., and Rodgers Sand Co. carry large tonnages of sand and gravel in their own floating equipment.

Basic Products Co., subsidiary of the Davison Coke & Iron Co., Pittsburgh, through its fleet, the Basic Barge line, recently started transportation of cement via river from its plant at Kenova, W. Va., to the Pittsburgh district. The company employs 11 special cargo barges designed by the Dravo Contracting Co.

A weekly schedule is maintained between Kenova and Pittsburgh, a distance of 160 miles, with transportation costs estimated at about 50 per cent less than rail charges. Increased use of river facilities will be effected with the completion of a project now under way at Neville Island, Pittsburgh, where a new cement plant will be operated in conjunction with a blast furnace and by-product coke ovens.

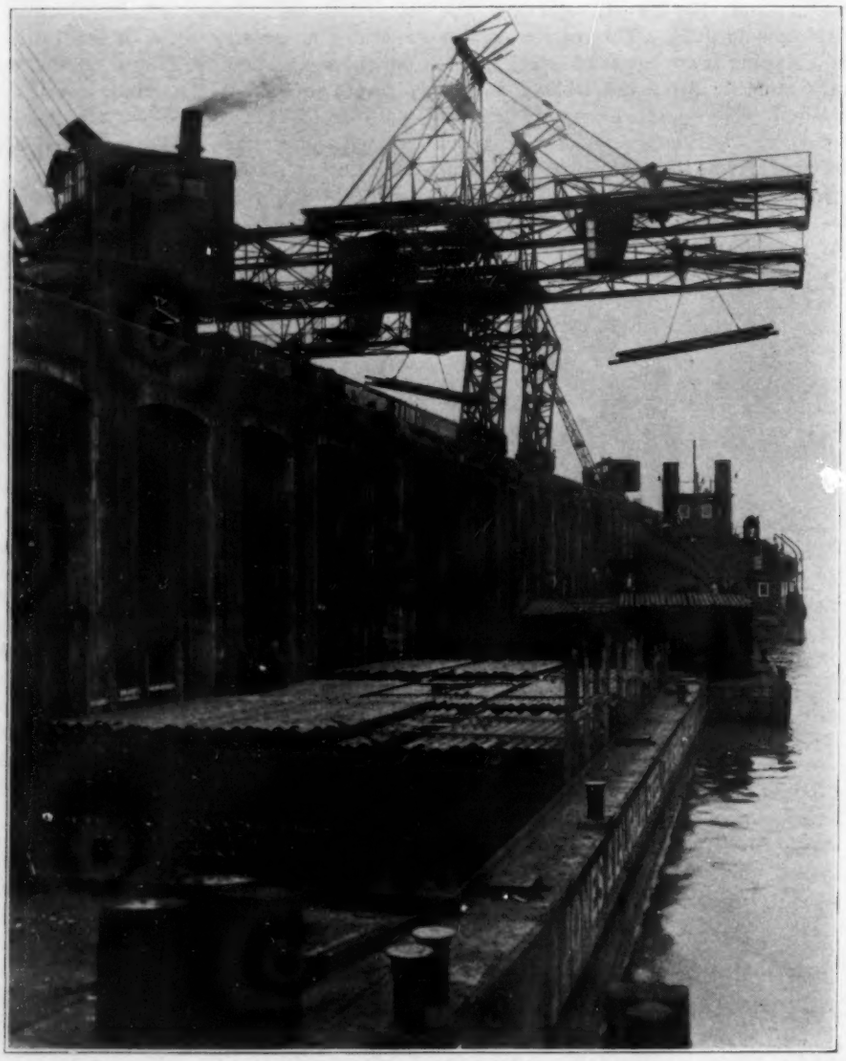
Tows Vary in Length

Some freight is transported by packets although this tonnage is not of large proportions and has not expanded with the rapidity of bulk cargo. Size of tows regularly moved from the Pittsburgh harbor varies according to load and conditions of the river and weather. For the long hauls as many as 19 barges are grouped in one tow. Six barges are commonly used in pool tows. The size of crew on each boat ranges from 15 to 30 persons.

It is evident that the present freight carrying facilities on the Ohio river are adapted mainly to the movement of large tonnages of bulk material. Formation of small barge lines to operate on tributary streams to carry small individual cargoes and to serve as feeders for the large barges is pointed to as the most effective means of extending river service to the many small manufacturers of the Ohio valley.

Terminals also are necessary. Practically all of the terminal facilities in operation at present are privately owned. Plans now are being made at Pittsburgh for the first unit of a river-rail shipping terminal, with an adjoining warehouse. St. Louis, on the Mississippi river, has provided excellent freight handling facilities. A $1,000,000 municipally-owned dock, including two warehouses with storage facilities for merchandise has been built. Hoisting equipment includes six cranes. The dock is served by railroad tracks, built and controlled by the city, providing accommodations for 60 railroad cars for direct rail-barge transfer.

To what extent freight traffic on the Ohio river will grow in future years is difficult to estimate. It is believed, however, that future expansion will eclipse the pace of the past decade, now that this great roadway of commerce is ready for increased use, and will be limited only by the future growth of the country.



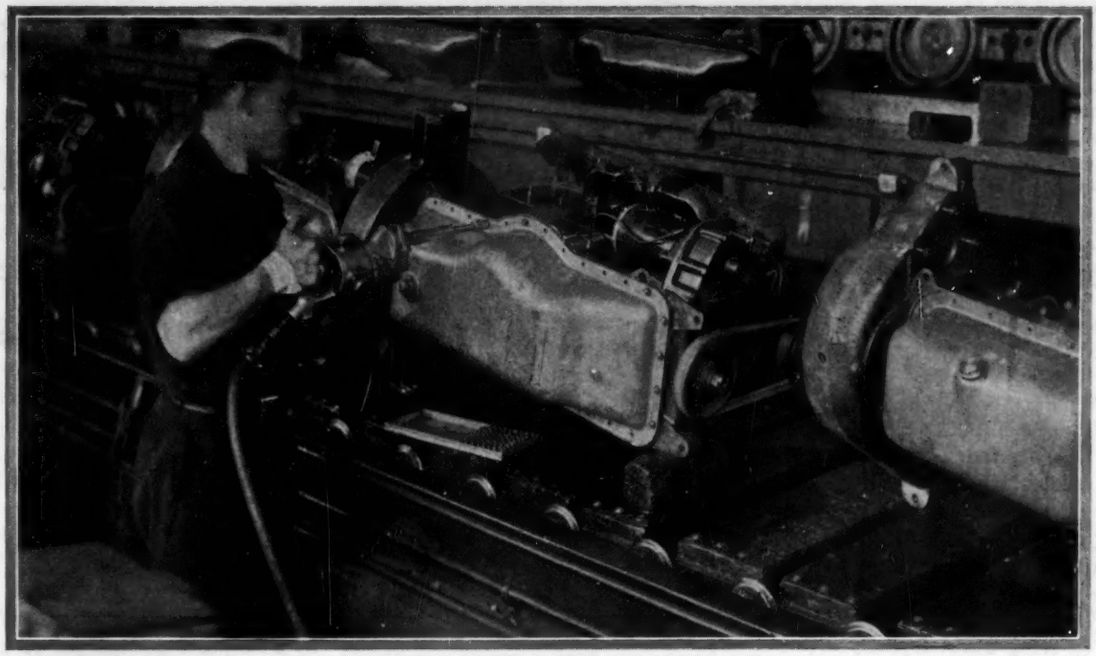
River terminal at St. Louis. Steel pipe is being transferred from Jones & Laughlin barges to railroad cars for delivery to western oil fields

Introduces Lacquers To Protect Metal Parts

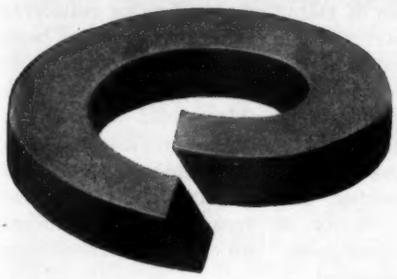
For sealing joints in gas mains and for painting structural iron, motors, oil tanks, metal parts of ships exposed to oil or vapors, fire hydrants, ship hulls, mine machinery and similar equipment, the General Electric Co., Schenectady, N. Y., is offering a series of lacquers in colors, for use where a durable and flexible insulating coating is demanded. The base of the new lacquers is an alkyd resin produced from phthalic anhydrid and glycerine.

These paints are resistant to acids, minerals oils, weather, and alkalies and will adhere to most all surfaces, including galvanized iron and aluminum. They also furnish protection against rust.

The new lacquers are available in five colors—red, blue, brown, green and aluminum. They may be applied by brushing, spraying, or dipping.



The oil pan assembly of a standard automobile engine is fastened in place with 32 nuts and 32 lock washers



Large Uses of Steel in Small Ways

144th Article
Lock Washers

ONE manufacturer has said that the development of the automobile has made the lock washer "popular." However, another version of the relationship is credited to a large eastern manufacturer of lock washers. He says the development of the lock washer has made the automobile popular, and "it seems probable that the modern automobile without lock washers to hold in place its hundreds of nuts would be a decidedly unpopular machine."

The number of lock washers used on a typical automobile does not appear to be known even by builders of automobiles. That it is close to 1000 seems probable. In one design of automobile engine 32 lock washers are required to hold the oil pan in place. The starter assembly has 18 and the manifold is attached with seven lock washers.

Estimates by manufacturers place the weight of lock washers used for one automobile at two to five pounds. If a weight of three pounds is taken as an average this would mean over 900 tons of lock washers per month for the automotive industry at the present high rate of car production.

Aside from the difference in design and purpose, lock washers differ from cut washers in the material from which they are made. Most small sizes of lock washers are made on automatic wire forming machines from wire of rectangular section. For larger sizes cold drawn strip sometimes is used in place of wire. The method of manufacture is to first form a helical spring and then shear this spring on semiautomatic machines into the individual washers.

A new outlet for lock washers is just developing in the aviation industry. Because of the difficulty of inspection and adjustment and the seriousness of a loose nut in airplane construction, lock washers are standard in this field wherever a bolt or nut is used.

After lock washers are formed they usually are heat treated, this operation in the larger plants being practically automatic. Then they are galvanized or coated with some other rust-resisting material.

THIS is the one hundred forty-fourth of a series of articles dealing with some of the obscure uses of steel which go far toward absorbing the American tonnage.

Among articles appearing every two weeks and not included in Vol. I containing 51 separate descriptions are:

Swords	*Bathroom Fixtures*
Paving Guards	*Snow Fences*
Reaction Kettles	*Stairs*
Fire Screens	*Cork Screws*
Voting Machines	*Universal Shafts*
Display Racks	*Sewing Machines*
Steel Stamps	*Lanterns*
Wire Screens	*Cleats*
Typewriter Spools	*Axes*
Chain Hoists	*Steel Ceilings*
Newspaper-Vending Boxes	*Card Tables*
	Welding Rods
Wire Lamp Shades	*Washing Machines*
Belt Fasteners	*Resilient Road Guards*
Sap Spouts	*Screw Drivers*
Flexible Conductors	*Windows*
Foundry Flasks	*Car and Bus Seats*
Teletype Machines	*Bathroom Cabinets*
Porch Furniture	

Output of lead in Oregon in 1928 increased 150 per cent in quantity and 130 per cent in value, compared with that of 1927. It totaled 13,246 pounds, valued at $768, according to the United States bureau of mines.

Excessive Claims of Superiority Harmful to Steel Companies

Buyers Confused by Fantastic Sales Policies Within the Industry—Clean Competition Needed for United Front Against Substitute Materials

By James A. Farrell

President, United States Steel Corp.

A PLEA for adherence to high ethical standards in manufacturing and merchandising was voiced by James A. Farrell, president of the United States Steel Corp., who was one of the speakers at the annual conference of executives of the flat rolled steel manufacturing industry, concluded last Wednesday at White Sulphur Springs, W. Va. Mr. Farrell declared that co-operation, rather than antagonism, by the various units of the steel industry is needed today, decrying unfounded claims as to superiority of various products, and the implication carried with such claims as to inferiority of competitors' material or products. The accompanying article is an abstract of Mr. Farrell's address.

THE work of trade associations, properly performed, is useful. The American Iron and Steel institute, since its inception, has endeavored to bring about friendly intercourse among its members and co-operation in technical research, which have been of vast benefit during the 20 years of its existence.

Any efforts designed to promote new uses of steel products or to expand their present usage, to assist both the manufacturing and consuming trade to a better understanding of the problems of initial manufacture and remanufacture, are worth while.

There has been an increased trend in recent years toward the formation of trade associations covering practically every line of manufacture and many commercial activities. It is said that there are some 15,000 of these associations in the United States.

Limitations Are Clarified

It is gratifying to note in this connection the helpful attitude of the federal trade commission following further interpretations of the Sherman law by the Supreme Court. The hearings which have taken place at the request of a number of these associations have no doubt served to clarify the limitations of these associations as to their methods of operation and permissible functions.

It is obvious that the American Iron and Steel institute can only serve as a general clearing house for the exchange of thought and plans for the benefit of the industry as a whole.

It must be left to individual and company initiative, and the mutuality of effort in respective lines of manufacture, to develop the respective interests of the several sections of the steel trade.

There is a serious and important aspect, however, as to the extent to which the industry should actively participate other than in technical discussion and research. The border line of collaboration under the law, when such co-operation might be interpreted by the courts as restraint of trade, does not seem to have been clearly defined. It is realized that one of the purposes of the federal trade commission is supposed to be to clear up such mysteries; but it is not understood that their suggestions offer more than helpful aid to those seeking such assistance in formulating methods and plans to come within the law.

Without wishing to discuss at this time the practical advisability of business associations seeking any measure of control under governmental auspices, in the expectation of having a mantle of legality enshroud its operations, it appears to some well informed observers that it is not essential or desirable to solicit that form of governmental intervention in business.

Another trend of the times appears to be toward the merger or consolidation of manufacturers having collateral interest; and when these have been and can be accomplished legally, it would seem that the integration thereby made possible would serve in a large measure to accomplish the purposes of less integrated organizations seeking through an association the solidarity in research and technical development which is economically beneficial.

It would, therefore, remain for the larger companies with their effective bureaus of research, sales and advertising, to assist by every proper means the efforts of associates in similar lines of work to promote the common interest in the more intelligent use and distribution of their product. This assistance might well comprise thorough collaborative and co-operative efforts to accomplish a stabilization of practices, costs and compensatory returns on investment.

Co-operation Is Essential

It is felt that such reciprocal effort will utilize their facilities for the accomplishment of similar purposes, to develop every possible means of improvement to the industry, and in collaboration to stimulate and promote customer uses of product, with such exchange of data and result with associations of its competitors as may be found proper and expedient.

It would seem that the units of the industry itself should have sufficient respect for each other's welfare voluntarily to refrain from unfair trade practices inveighed against by numerous associations who have sought the assistance of the federal trade commission and by close observance of

ordinary commercial ethics and reciprocal consideration.

Remedies of any ills affecting our business are in our own hands. For instance, the orgy of excessive claims for the superiority of products differing but slightly, if at all, from those of other manufacturers, has assumed fantastic proportions. It incites competitive and expensive effort along similar lines by all competitors, with a mass of assertions and refutations which in the end merely serve to confuse the mind of the buyer or promote harmful conflict among manufacturers.

If this is intended to be a challenge as to the lengthiest pocketbook in advertising achievement and promotional publicity, the challenge will of course be met by the interests who naturally resent insinuations as to the superiority of competitive product or the inferiority of their own.

It is in effect a form of salesmanship universally abhorred, of decrying the wares of a competitor, or vaunting unfounded or unprovable claims of excellence of products whose chief merit may be in the assumption of a peculiar or meaningless name.

Competitive Efforts "Inadvisable"

Possibly much of this competitive effort has been instigated by extraordinary pretentions of those who offer substitutes for steel, and attempt to convince the public, and especially readers of literary journals, instead of technical publications, which would seem to be the logical media for imparting technical information, that the world has at last found what it has been waiting for.

The only result from these claims is likely to be at the expense of the long-suffering industry, which has only recently emerged from the blight of over-capacity, under-consumption and meager profits. You can hardly term such effort as unethical, but rather as unnecessary and inadvisable. One of the best achievements which associations in the industry could accomplish would be to frown on illogical and unwise claims in selling policies.

There is much to be said as to the advantages of association work to both makers and consumers in assisting toward proper publicity methods in refuting visionary suggestions of the superiority of substitutes; but much of this work would be minimized if the members themselves refrained from claims irreconcilable with the facts.

Another boomerang to be averted, if possible, is the stimulation of unnecessary capacity through exciting ourselves over the prospect of more than a normal increase in annual average consumption consequent upon growing population and prosperity.

There is a wide line of demarcation between normal and natural efforts to protect our industries and expand the use of their product along sane and normal lines, with due regard for the interests of others—and a scramble for business, with a heavy and burdensome budget of questionable utility, on the assumption of an unlimited increase in demand.

There have been occasions in our industry when we were inclined to to be more fearful than hopeful. At such moments we have felt that our business had fallen on parlous times, at such times the future of our industry was not pleasant to contemplate, but we recover quickly from moods of this sort. At present and for some time past we have had capacity operations, the indications are that we will have a reasonably full operation for some time to come. When business slackens, we should act well and wisely. There is no reason why reasonable profits should not accrue on a lesser rate of operation.

Until we have gained the wisdom, which we have not always had, of being satisfied with our normal share of the business going, we can do the industry incalculable damage and retard its normal development. We should by this time have attained that control of ourselves which will avert its misapplication to unbusinesslike methods.

If we are seeking permanent economic factors they can be largely accomplished through co-operation.

Elect Officers, Choose Honorary Members

Election of Harold B. Smith, professor of electrical engineering, Worcester Polytechnic institute, Worcester, Mass., and consulting engineer, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., as president of the American Institute of Electrical Engineers, was announced at the annual meeting of the organization at Swampscott, Mass., June 25. Other officers elected were: Vice presidents, E. C. Stone, Duquesne Light Co., Pittsburgh; W. S. Rodman, University of Virginia, University, Va.; Herbert S. Evans, University of Colorado, Boulder, Colo.; C. E. Fleager, Pacific Telephone & Telegraph Co., San Francisco; and C. E. Sisson, Canadian General Electric Co. Ltd., Toronto. George A. Hamilton, electrical engineer, Elizabeth, N. J., was re-elected treasurer.

Three distinguished American engineers were elected honorary members of the institute at the directors' meeting. They are President Herbert Hoover, most outstanding American engineer; Charles F. Scott, engineer and inventor, head of electrical engineering department, Yale university, and past president of the institute; and Charles F. Brush, engineer and scientist, recipient of the Edison medal, Cleveland, whose death occurred June 15 while he was being elected.

Five other Americans and three representatives of foreign countries had previously been elected to the honorary roll of the institute. The Americans are John J. Carty, Thomas A. Edison, Michael I. Pupin, Ambrose Swasey and Elihu Thomson.

National Screw Thread Commission Reports

Important revisions are announced in the third report of the National Screw Thread commission just issued as miscellaneous publication No. 89 of the bureau of standards, Washington. Among the revisions are the change in designation in screw-thread standards from "national" to "American national"; the addition of standards sizes above 1½ inches to the fine thread series, but with coarser pitches than those originally published in the progress report of 1921; increase of tolerances on minor diameter of nut, over ranges of sizes smaller than 1⅛ inches, of the coarse and fine grained series; the insertion of the 3-inch, 3½-threads per inch size in the coarse thread series; the substitution of tables of specific pitch diameter tolerances for threads of special diameters; pitches and length of engagement in place of the method of determining such tolerances but adding together increments, thus establishing consistency with the pitch diameter tolerances specified for the regular thread series; and the revision of head proportions of wood screws.

Included in new material added to the body of the report are the following specifications: Wrench head bolts and nuts and wrench openings; other screw, bolt, and nut proportions by reference to certain specifications of the American standards association and federal specifications board; an outline for standard practice for acme screw threads, screw threads for oil well drilling equipment including pipe, casing, line pipe, cable drilling tool joints rotary drilling taper joints, cold-drawn and machined working barrels, and sucker rods by reference to

specifications published by the American Petroleum institute; standard hose connections for welding and cutting torches; rolled threads for screw shells of electric sockets and lamp bases; and a 12-pitch thread series.

Standard designs of plain and threaded plug and ring gages; specifications covering class 5, wrench fit for studs; common practice as to thread series and class of fit for screws bolts and nuts; and wire methods of measurement of thread thickness of some threads, are some of the topics mentioned relative to threading tools, in the appendixes. Copies of the report may be obtained from the government printing office, Washington, for 50 cents.

Bearing Bronzes Studied

Results of research work on bearing bronzes including those commonly used as bushings in automotive and industrial work, have been made public by the bureau of standards, Washington. Various alloys were tested for resistance to wear, resistance to repeated pounding, hardness and toughness, and were examined under the microscope. Sponsored by the Bunting Brass & Bronze Co., Toledo, O., tests on automotive bearing alloys showed the need for a close study of each installation before any specification is made for the composition of the bearing metal.

Closed Shop Increases Church Building Cost

A nationwide survey of church building costs in 1927, just completed by the open shop committee of the National Association of Manufacturers, shows an average of a little over 34 cents per cubic foot for construction on the open shop plan in 23 cities, and an average of nearly 41 cents in 25 cities for closed shop erection. B. L. Worden, president Cutler-Hammer Mfg. Co., is chairman of the committee.

Commenting on the results of the survey he said:

"Of course, the cost of any specific building is affected by the general architectural treatment, size, exterior ornamentation, interior decoration and other factors. It would therefore be unjust to make comparisons from the figures as to building costs in any two cities in the same group or in opposite groups. But such local and special differences are offset and eliminated in considering the number of items in the groups as a whole. We find the average cost of religious buildings in the United States about a fifth more where the erection was controlled by the closed shop production system.

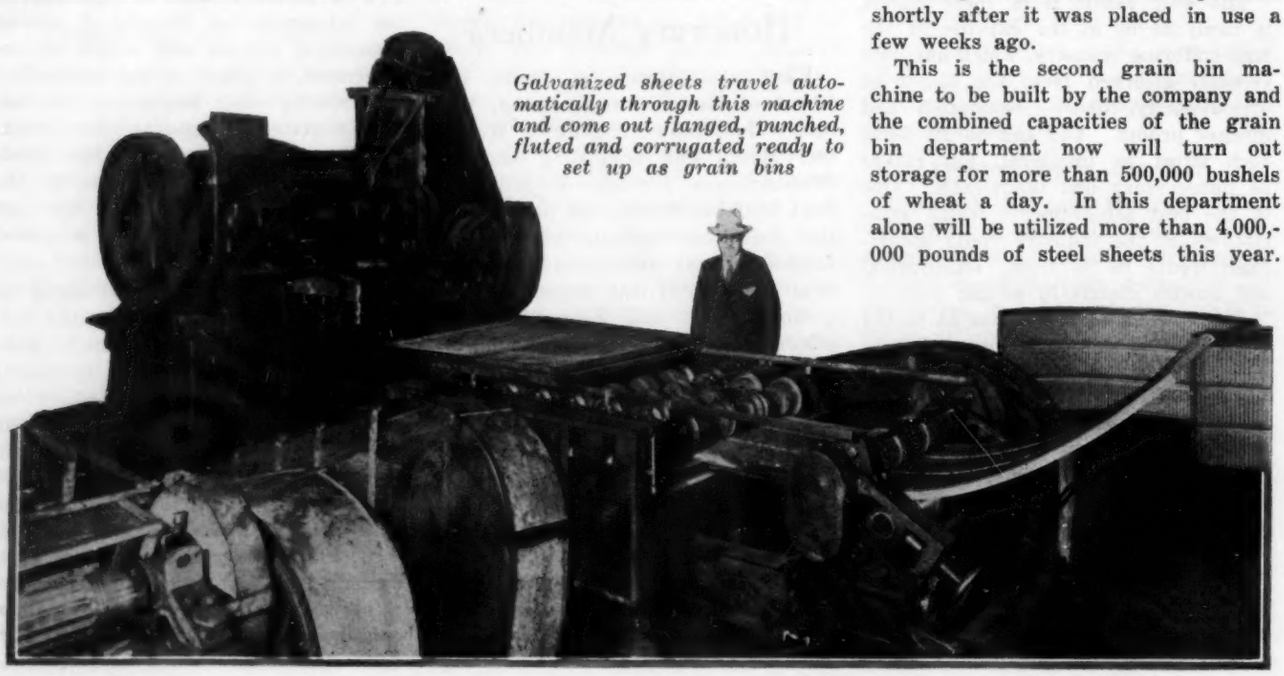
Turns Out Grain Bins at a Rapid Pace

STEEL grain bins at the rate of one every three minutes are turned out by a newly developed automatic machine installed recently by the Columbia Steel Tank Co., Kansas City, Mo. Some idea of the unique mechanism which manufactures its product on a continuous basis is gained from the accompanying illustration. The equipment is so built that sheets of galvanized steel fed in at one end travel automatically through the machine and come out at the other end flanged, punched, fluted and corrugated ready to set up as bins.

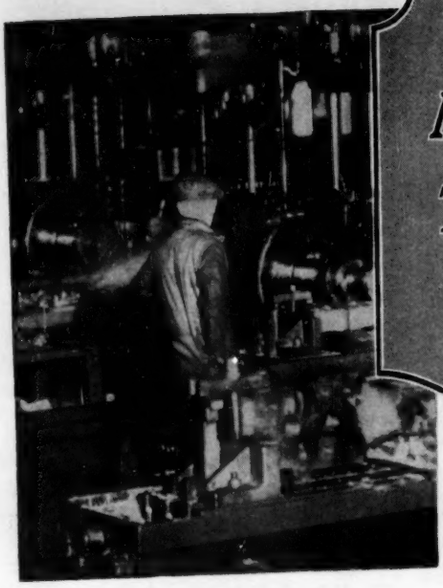
Hundreds of intricate problems had to be solved in the building of this machine, not the least of which was to stop the sheets at exactly the right moment for the four punching operations. This problem was complicated by the fact that holes were to be punched completely across the ends of each sheet in the first operation but only at the edges in the other punching operations. Three motors are used in operating the various parts of the machine, all of which have to be synchronized to the proper relative speed.

The machine was a year in the building in the machine shop of the company and cost approximately $50,000. A punch press built by the Niagara Machine & Tool Works, Buffalo, forms the original unit to which the other mechanisms were assembled. A. A. Kramer, president of the Columbia company and designer of the equipment, is shown in the illustration observing the machine in operation shortly after it was placed in use a few weeks ago.

This is the second grain bin machine to be built by the company and the combined capacities of the grain bin department now will turn out storage for more than 500,000 bushels of wheat a day. In this department alone will be utilized more than 4,000,000 pounds of steel sheets this year.



Galvanized sheets travel automatically through this machine and come out flanged, punched, fluted and corrugated ready to set up as grain bins



New Machine Tools and Shop Equipment

"Without tools man is nothing, with tools he is all."—Carlyle

Yearly Machinery Trends Analyzed

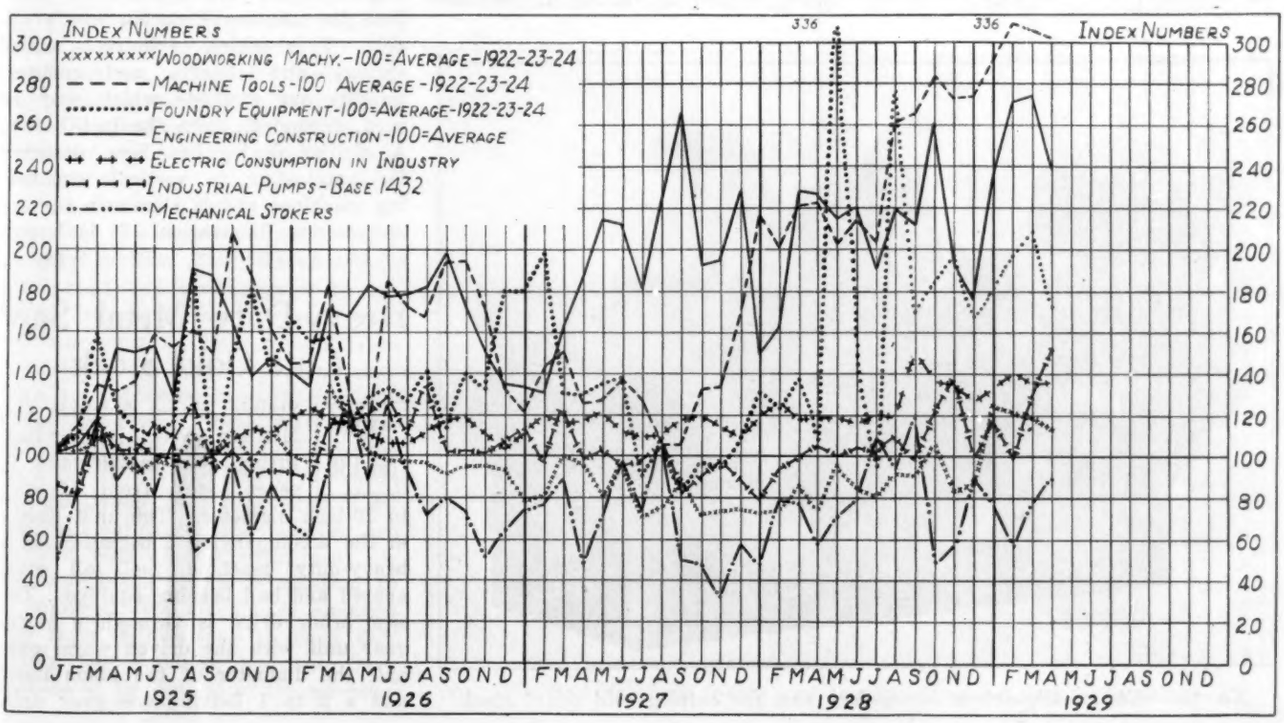
INTERESTING light is thrown on the barometric position of the machinery industry today by a chart prepared by the industrial machinery division, bureau of foreign and domestic commerce, department of commerce, Washington. The chart, illustrated herewith, was prepared under the direction of W. H. Rastall, chief of the division, and depicts the trends of various "capital goods" over a period of the last four years.

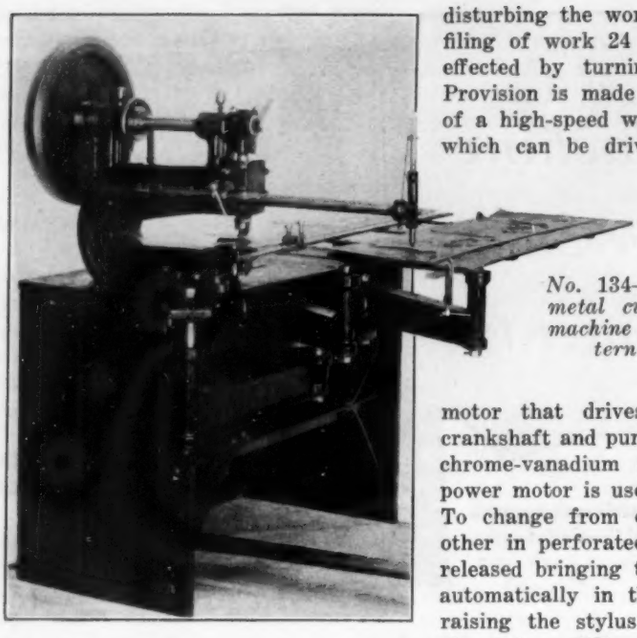
Monthly fluctuations of seven items were noted and reduced to a common scale, using 100 as the index figure for the average of 1922, 1923 and 1924. These values were plotted for the years 1925, 1926, 1927, 1928 and up to April, 1929. Woodworking machinery, machine tools, foundry equipment, engineering construction, industrial pumps, mechanical stokers and electrical power consumption in industry were the seven forms of "capital goods" considered. Electrical consumption was included since it was thought that this trend might produce a curve representative of the business cycle over the period.

Some method was sought to combine the six branches of the machinery trade into one general curve with the thought that it would be more significant, but several difficulties were encountered with this idea. One was the question of how much weight to give each separate item. Thus, although machine tools are considerably more important than, say, mechanical stokers, the exact factor to use in combining these two remained somewhat of a puzzle.

An economic theory has been expressed that the machinery trend is

(*Concluded on Page* 13)





No. 134—Automatic 12-inch metal cutting and piercing machine duplicating a pattern in sheet metal

Metal Cutting Machine Duplicates Patterns

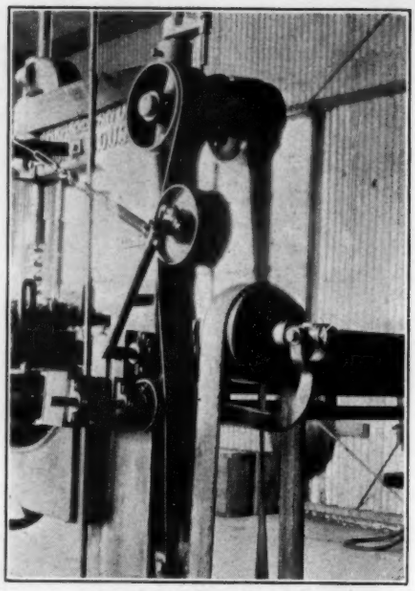
No. 134

S. A. Asquith & Son, 2514 Sunset boulevard, Los Angeles, recently have developed a 12-inch automatic metal cutting and piercing machine which will duplicate a pattern in sheet metal. The device consists of a stylus and punch, stationary in a horizontal plane, and a platen for carrying the pattern and material to be cut. This platen is mounted on supports free to move in any direction in a horizontal plane. The main punch frame is of semisteel and has a throat depth of 12 inches, providing a working area of 12 by 48 inches without disturbing the work or pattern. Profiling of work 24 inches wide can be effected by turning over the sheet. Provision is made for the attachment of a high-speed wood or metal router which can be driven from the same motor that drives the punch. The crankshaft and punch ram are made of chrome-vanadium steel. A 1/3-horsepower motor is used to drive the unit. To change from one opening to another in perforated work the pedal is released bringing the punch to a stop automatically in the up position. By raising the stylus the work may be placed in a different position to start a perforation. At the right in the accompanying illustration the platen carrying the pattern and the stylus in position are shown. The work is shown at the left passing through the jaws of the punch.

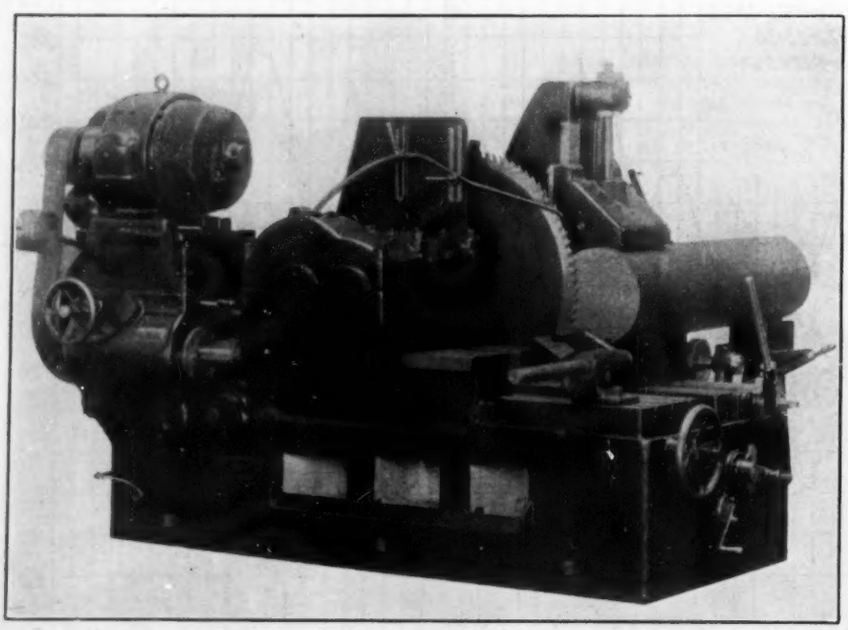
Tension Device Lessens Belt Slippage

No. 135

Harry M. Perry, 638 North Main street, Los Angeles, has placed on the market a device for taking up the slack in drive belts. The unit consists of an idler pulley which is forced down against the belt by a cantilever spring. The spring affords an automatic method of taking up and letting out belt stretch and shrink caused by load and temperature changes. The pulley is mounted on tapered roller bearings with threaded axle for adjustment; adjustable bronze split-hinge bearings; and an adjustment for leading the belt to center. Variable tension of the cantilever spring is provided by clamping it to a split sleeve which may be rotated on the hinge bar and clamped in any desired position. For average drives one spring is sufficient; however, for large drives two or more springs may be used. For belts not over 12 inches wide the hinge bar may be attached to the motor. Tilting stands or steel supports serve as the bases for the larger sizes. Tension devices other than the cantilever spring are available. Turnbuckles, cable reels, coiled springs and sheaves and counterweights are methods which may be used, dependent upon the installation. A similar device has been designed for application to vertical woodboring machines and is shown in the accompanying illustration. It is known as the quarter-turn tension type.



No. 135—Belt tension device applied to woodboring machine



No. 136—Electrically-driven heavy-duty saw for cutting cold metal stock

Heavy-Duty Metal Saw Cuts Cold Stock

No. 136

Steinle Turret Machine Co., Madison, Wis., is manufacturing cold metal saws in seven sizes, from 1¾-inch to 20-inch diameter. The unit, shown in the accompanying illustration, is a heavy-duty machine tool, all steel geared and ball bearing equipped. The saw arbor drive is through a worm gear unit with the driven worm one-half the diameter of the blade itself and a 2 to 1 herringbone gear unit.

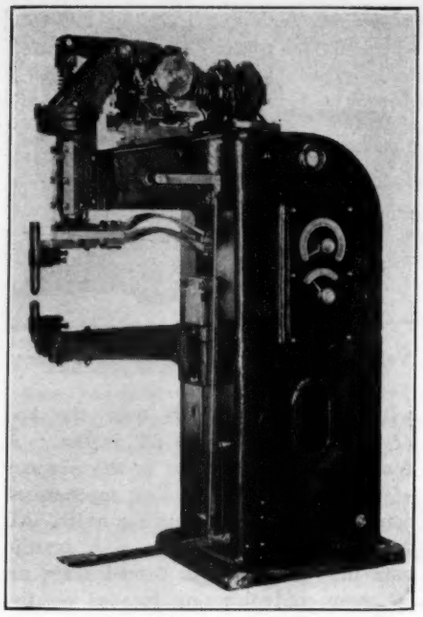
The blade cuts the stock on the upward motion and thus places the stress of the cut down against the bed of the machine where it is absorbed. Four blade speeds and five blade feeds are available through selective gearing, giving a flexibility of operation for hard as well as soft materials. Feeds can be changed while the blade is under the cut. An elastic clutch acts as a safeguard against excessive pressure. Adjustable feed trips are provided and at the completion of the cut, the blade carriage automatically returns to the starting position by power rapid traverse.

Stock is fed to the stock stop mechanically by a roller arrangement which is brought into contact with the bar by a slight pressure on the control lever. The stock is clamped by a hammer-type clamping wheel. Drive is through a single pulley direct to change gear box. All gears run in oil and shafts on ball bearings. A blade chip remover eliminates chips which adhere to the blade teeth after passing through the cut. A deep coolant sump is built in the base of the machine. Coolant is furnished through a double oil pipe lead to the point of the blade. The blade itself consists of a series of high speed steel segments riveted to a high tensile steel center disk. Each segment comprises four cutting teeth. Automatic grinders are furnished for sharpening the blade teeth.

Hydraulic Feature Used on Boring Machines

No. 137

Moline Tool Co., Moline, Ill., recently has designed and built single-purpose radiator loop boring, facing and tapping machines. They are made with four spindles and can be arranged to have all spindles boring and facing, all facing and tapping or half boring and half tapping. General construction consists of a large bed with V-guides for the two rails which carry the spindle units. The rails are properly gibbed and are actuated by hydraulic cylinders, one for each rail, and in order to have the same amount of pressure on all tools, these two slides are connected through rack and pinion, equalizing their traverse so that if one cylinder does not function properly, the other cylinder will operate both rails to its capacity. All fast running shafts and spindles are provided with an end adjustment for properly setting tools in relation to one another. The machine is equipped with three motors, one on each rail, driving two spindles, and the third mounted at the bottom of the machine.



No. 138—Spot welder with power drive attachment

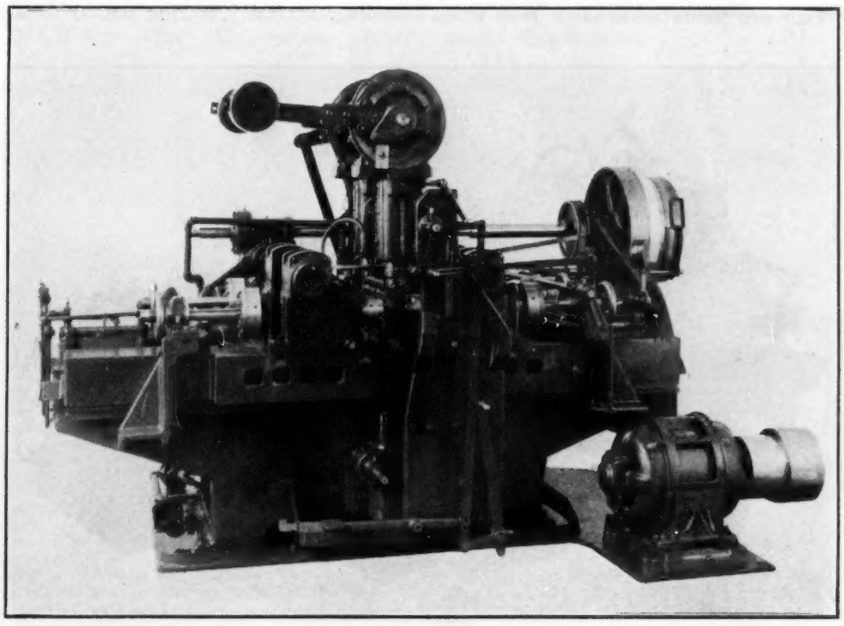
The main drive in each case is through flexible-rope belts and spiral gears to the spindles. In the center of the machine is a holding fixture, consisting of an adjustable bar carrying V-block guides and stop insuring the proper setting of the work.

When the machine is adapted to facing and tapping, as shown in the accompanying illustration, the tapping is done by mechanical feed through a screw and nut having the same lead as the tap used for the work. The facing is done hydraulically and the cutters are mounted on the main spindles, while the taps are inserted in small spindles operating through the centers of large spindles. In this latter case one common drive motor is used, being mounted on the base, driving a mounted drive shaft through open and closed belts to keep the timing correct. Average production on this operation is 90 loops per hour. The machine can be adjusted to take any loop from 5 to 13 inches wide and from 8 to 38 inches between centers of holes.

Builds Power Drive Unit for Spot Welders

No. 138

Thomson Electric Welding Co., Lynn, Mass., recently has developed a power drive attachment for the company's standard medium and heavy-duty spot welders. The unit is compact and consists of a 1-horsepower motor connected through a three-speed flexible rope drive to a gear reduction unit and camshaft carrying a suitable cam for obtaining movement of the upper electrode or welding die. A special adjustable split cam for controlling the current dwell, synchronized with the welding cycle, is supplied. The ways or slides for the upper head are of the rectangular type adjustable for wear. The lower horn is adjustable vertically through a distance of 12 inches or 24 inches and a special brace for the lower horn is supplied for use when welding heavier gages of material or in welding flat stampings by the projection method where large flat faced dies are used and it is essential that these dies remain parallel at all times. A multiple-tooth clutch controlled through a foot lever is provided, permitting the welder to be operated either as a



No. 137—Radiator loop facing and tapping machine with hydraulic feed

single stroke press or continuously by keeping the clutch lever depressed. A wide range of welding speeds for different classes of work may be obtained by use of various speed motors and gear reduction units. This new power drive unit may be attached to any standard welder, such as shown in the accompanying illustration.

New Drills Designed for Close-Quarter Work

No. 139

Goodell-Pratt Co., Greenfield, Mass., recently has introduced a new line of electric drills, made in a wide variety of sizes ranging from ⅛ to ⅞-inch in both heavy-duty, light-duty and standard types. The chuck is set on a line with the horizontal top of the drill, permitting close-up drilling in close quarters. Long sleeve bearings of high-speed bearing metal are used, eliminating the danger of breakage when ball bearings are used. A tightly sealed wick oiling system provides lubrication for the armature shaft. Spindle bearings and gear bearings are double end and line reamed after assembly. A fan is mounted in a separate chamber on the armature shaft and supplies air to cool the frame and handle. All gears are made of a specially heat treated alloy steel.

Designs New Automatic Chucking Machines

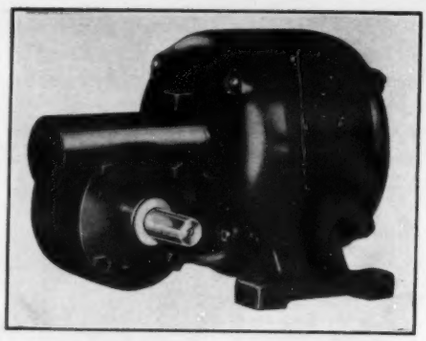
No. 140

Foster Machine Co., Elkhart, Ind., has developed new automatic chucking machines built in the platen and automatic indexing turret-types, both of which are manufactured in four sizes, with respective swings over the bed of 17, 22, 25½ and 33 inches. A feature of the machine is the absence of gears from the feeding mechanism controlling the tool-carrying units. All feeds are actuated from a hydraulic ram into which oil is forced from an oil gear control pump located on the head end of the machine and driven through a silent chain from the main drive shaft. The feeding movements to the tool carrying units range from 0 to approximately 40 inches per minute. Feed changes are effected by varying the capacity of the pump and its delivery of oil to the ram, cams being provided to obtain the desired feed and to maintain the same after once adjusted. Rapid traverse action is provided to return the tooling from the work and to position for the start of cuts.

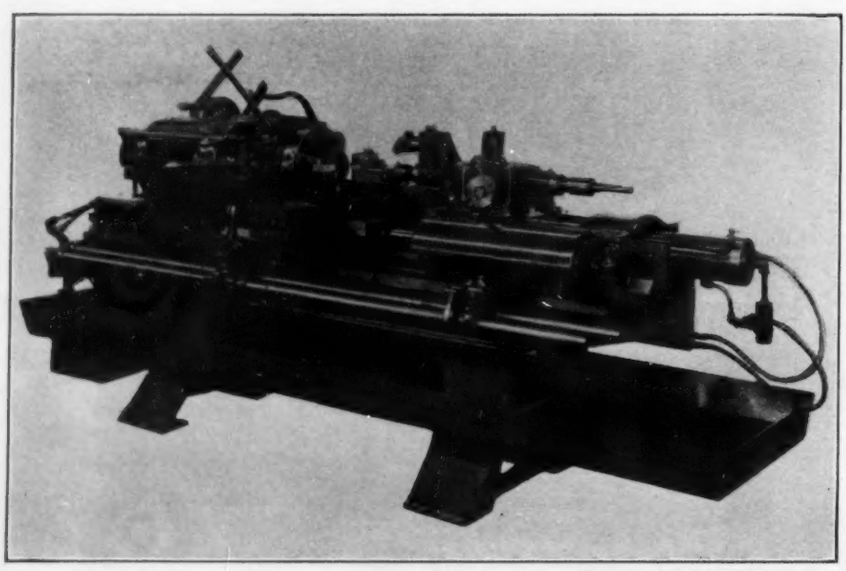
On the platen-type machine, the tool carrying units consist of a front and a rear cross slide and a main slide, all of which are mounted on the platen. Movements of the platen ordinarily are rapid, but fully controllable, and when desirable, can be reduced automatically to any feeding rate of travel which may be required for feeding auxiliary tooling bolted to the platen for boring, forming or turning operations.

On the indexing turret-type machine, shown in the accompanying illustration, the tool carrying units consist of a front and rear cross slide mounted on a bridge spanning the bed, and an automatically indexed hexagon turret. The hexagon turret advances and returns automatically and the entire action is effected from an oil ram located centrally between the ways at the rear. The cross slides can be operated simultaneously or independently.

A variety of spindle speeds is available. Provision is made for the use of overhead piloted tooling as well as central piloted. All the machines are equipped with roller bearings on the spindles, ball bearing back shafts, multiple-disk clutches and all steel gear trains operating in oil.



No. 141—Motor-driven speed reducer



No. 140—Indexing turret-type automatic chucking machine

Motor-Driven, Worm and Gear Speed Reducers

No. 141

Janette Mfg. Co., 556-558 West Monroe street, Chicago, recently has placed on the market a new line of fractional horsepower motor-driven worm and gear speed reducers. The worm-gear assembly is built durably with a special alloy steel worm and bakelite gear. A wide range of standard gear reduction ratios is offered. The reducers are equipped with ball bearing motors of standard voltages and frequencies. If desired, motors wound for odd frequencies and voltages as well as for two and three-phase current can be furnished. Motor shaft and countershaft are precision ground and any arrangement of shaft position and rotation may be obtained. The gear box which is filled with a special type of grease lubricates the rear motor bearing as well as the bronze countershaft bearings. On the heavy-duty types of reducers single-phase motors are all of the repulsion-induction design with high starting torque and low starting current. Motor horsepowers ranging from 1/30 to 1/3 are included in the line, the accompanying illustration showing the general appearance of the standard alternating current models.

Bearing Design Improved on Air Compressors

No. 142

Worthington Pump & Machinery Corp., Harrison, N. J,. has announced a new line of air compressors, employing tapered roller bearings on the main crankshaft journals. Capacities

range from 100 to 300 cubic feet per minute and operating speeds are mod erate, making the units suitable for operation in small power plants and by unskilled operators. Oil rings which deflect surplus oil and return it to the crankcase, are mounted on the shaft beyond the bearings. Feather valves are standard equipment. These valves are light strips of steel, approximately 1/32-inch thick, which flex when opening against a curved guard to permit the passage of air. Regulation may be by an automatic starter and pressure switch mounted on the motor, or by a pressure regulator attached to the inlet valves. Compressors with this latter type of unloader which bypasses the air back to suction, are claimed to avoid overheating. The units are available with ball bearing idlers for short belt drives; with flexible rope drive facilities, or with a synchronous motor mounted directly on the compressor crankshaft, eliminating transmission mechanism.

Yearly Machinery Trends Are Analyzed

(*Concluded from Page* 9)

actually a barometric index and forecasts either prosperity or adversity in the general business cycle. If such a theory is sound, it might be expected that some co-relation could be found between trends of elements which go to make up the machinery industry as a whole.

For example, theoretically at least, it might be supposed that woodworking machinery and machine tools would follow a more or less parallel course. However, by examining the chart it is seen that such is not the case, in some instances, such as from June to November, 1926, and October to December, 1927, an "inverse co-relation" appearing.

The wide variation in foundry equipment trends stands out as a singular development on the chart. In May, 1928, this index rose to the record high of 335.6 and by July had dropped precipitately to below the 100 average line; but within a month the index had risen again to the second highest point in the four-year period.

Machine Tool Index Climbs

The machine tool index, as may be seen, has been mounting comparatively steadily since September, 1927, reaching the record high point of 336 in February of 1929. With one or two minor exceptions the curve for engineering construction has paralleled approximately the machine tool index, with the exception that it is slightly ahead in point of time. This appears to be likely as machine tool activity probably would increase shortly after a rise in engineering construction.

These three curves—foundry equipment, machine tools and engineering construction—seem to be in the healthiest condition of the six in the machinery group. Woodworking machinery, industrial pumps and mechanical stokers have not bettered their positions materially since January, 1925. The latter appear to be more stabilized and show no startling rises or declines.

If electrical consumption in industry is to be taken as an indication of the general business cycle, then, although improved considerably from the latter part of 1927 and early 1928, business is at about the same level of 1925 and 1926.

The question naturally presents itself—what of the remaining months of 1929? Are the various indices girding for a spurt to new record highs or awaiting a dizzy drop to the 100 mark or lower? Inspection of the chart shows that declines have been registered in the early months of this year by machine tools, foundry equipment and engineering construction, trends which are not characteristic of any other year appearing on the chart. Is this unusual trend merely a seasonal lull or the start of a broader cyclical depression? No present indications seem to point to any cyclical drop of this sort.

Alloys of Iron Research Financing Started

Batelle Memorial institute, Columbus, O., has offered to contribute $50,000 at the rate of $10,000 a year for 5 years toward research work on alloys of iron now being organized by the Engineering foundation in cooperation with the American Institute of Mining and Metallurgical Engineers. The gift was announced at a recent meeting of the foundation in New York and is conditioned upon the subscription by others before the end of this year of the remainder of a fund of $150,000. The fund is to be used for a thorough examination of all available literature in any language upon iron and its alloys, and the publication of monographs and manuals valuable to industries and research workers. The bureau of standards, Washington, through its director, George K. Burgess, has signified its willingness to help the project by offering the service of its staff to the amount of $1000 a year for 5 years.

Imports of fuel briquets in 1928 were 71,485 tons.

Iron Trade Review's Calendar of New Equipment

Item	Comment	Builder	No.	Date Described	Page
Switchboard instruments	Special glass minimizes glare; anti-parallax scale	General Electric Co.	121	June 13	1576
Paint sprayer	Operates on current from light socket; light weight	DeVilbiss Co.	122	June 13	1576
Milling machine	Rough mills gear and pinion teeth on production basis	Kearney & Trecker Corp	123	June 13	1577
Spot welder	Applicable to welding of light sheet metal parts	Thomson Electric Welding Co.	124	June 13	1577
Die head	Self-opening and nonrotating with integral trip	Murchey Machine & Tool Co.	125	June 20	1664
Generators	200, 300 and 400-ampere capacities for arc welding	Westinghouse Electric & Mfg. Co.	126	June 20	1664
Spot welder	Also may be used for multiple projection welding	Taylor-Winfield Corp.	127	June 20	1665
Sander	Vertical belt type for sanding irregularly shaped parts	Porter-Cable Machine Co.	128	June 20	1665
Switch	Small manual starting switch; throws motor across line	General Electric Co.	129	June 20	1665
Buffer	Dual-motored with flexible rope drive	Hisey-Wolf Machine Co.	130	June 20	1665
Arc welder	Gas engine driven; 300-ampere generator	Westinghouse Electric & Mfg. Co.	131	June 27	1721
Arc welder	Controls are unified and improved; welded assembly	Lincoln Electric Co.	132	June 27	1721
Lathe	Automatic; for machining lighter types of work	Seneca Falls Machine Co.	133	June 27	1722
Metal cutting machine	12-inch automatic cutting and piercing machine	S. A. Asquith & Son	134	July 4	10
Belt idler	Exerts variable pressure on belts to take up slack	Harry M. Perry	135	July 4	10
Saw	Heavy-duty cold metal saw; four speeds, five feeds	Steinle Turret Machine Co.	136	July 4	10
Radiator finisher	Radiator loop boring, facing and tapping machine	Moline Tool Co.	137	July 4	11
Spot welder	Three-speed, flexible-rope power drive attachment	Thomson Electric Welding Co.	138	July 4	11
Drills	Design permits close-up drilling; 1/8 to 7/8-inch sizes	Goodell-Pratt Co.	139	July 4	12
Chucking machines	Automatic platen and indexing turret types	Foster Machine Co.	140	July 4	12
Speed reducers	Fractional-horsepower motor-driven worm and gear types	Janette Mfg. Co.	141	July 4	12
Compressors	Air compressors having improved bearing design	Worthington Pump & Machy. Corp.	142	July 4	12

Testing Materials Society Speeds Up Its Standards Procedure

American Society for Testing Materials Recognizes Obligation to Both Producers and Consumers of Industry

Program of Annual Meeting Includes 50 Committee Reports and 59 Technical Papers—New Officers Are Elected

WITH the holding of its thirty-second annual meeting in Atlantic City, June 24-28, and the best attended of any recently, the American Society for Testing Materials rounded out a long period of service to industry. In visualizing the work of the society, President G. W. Thompson outlined its responsibilities to the membership, which is made up of both producers and consumers. Mr. Thompson pictured the impregnable position of the organization and stated that this status will continue as long as the society performs its functions rationally, justly and with an unbroken process of development. It is the desire of the society to build on sound and permanent foundations.

In the report of the executive committee, Secretary C. L. Warwick pointed to the growth in membership during the past year. Since the previous meeting new committees have been organized on various ferrous and nonferrous alloys. Favorable action was taken by the executive committee on steps to expedite standardization procedure. The new policy will permit receipt and publication of reports of committees in the period between annual meetings.

In recognition of a service rendered the society and industry through the presentation of a paper entitled "Long Time or Flow Tests of Carbon Steels at Various Temperatures with Particular Reference to Stresses Below the Proportional Limit," which was read at the annual meeting last year, the authors, L. W. Spring and J. J. Kanter, were awarded the Charles B. Dudley medal. Mr. Spring is chief chemist and Mr. Kanter is testing engineer of the Crane Co., Chicago.

The fourth annual Edgar Marburg lecture was delivered by Dr. Saul Dushman, assistant general director of research laboratory, General Electric Co., Schenectady, N. Y., on the subject, "The Nature of Cohesive Forces in Solids."

Society Reports Good Progress in Year

METHODS for expediting standardization procedure were proposed in the report of Committee E-5 on standing committees at the opening session on Tuesday afternoon. Recommendations of the committee suggest the establishment of a normal procedure for standing committees to submit reports between annual meetings of the society and the establishment of a procedure for expediting the publication, as tentative, of new standards that have been adopted in prescribed form by a standing committee.

Recommend Report Procedure

It was pointed out that by permitting committees to present reports to the executive committee at any time, and preprinting the reports and distributing them to members as soon as available, the material will be brought to the attention of the members much more quickly than now is possible. It is believed that since the reports handled in the recommended manner will not reach the members as a part of a large group of reports, more deliberate study will be possible. The committees in turn will benefit by receiving a greater volume of constructive criticism. The recommendations of the committee were approved in the report of the executive committee made Wednesday evening.

R. E. Hess, assistant secretary of the society, presented the report of the committee on papers and publications. The convention program contained 50 committee reports and 59 technical papers, an increase over the number presented last year.

Officers Elected and Introduced

After tellers had counted the votes, the new officers of the society, who were nominated last spring, were declared elected. The officers, whose names are given in the accompanying box, were formally introduced.

Nomenclature, research, and methods of testing were the subjects of reports and papers presented at the session Tuesday afternoon, with G. W. Thompson, president of the associa-

New Officers

AMERICAN SOCIETY FOR TESTING MATERIALS

President

T. D. LYNCH
Consulting metallurgist, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Vice President

F. O. CLEMENTS
Technical director, research laboratories, General Motors Corp., Detroit

Executive Committee

G. B. HAVEN
Professor of machine design, Massachusetts Institute of Technology, Cambridge, Mass.

C. R. HOOK
Vice president and general manager American Rolling Mills Co., Middletown, O.

H. E. SMITH
Engineer of materials, New York Central lines, New York

G. E. WARREN
Assistant general manager, Portland Cement association, Chicago

F. O. CLEMENTS

Elected vice president of the American Society for Testing Materials. He is technical director, research laboratories, General Motors Corp., Detroit.

tion, in the chair. In presenting the report of the committee on nomenclature and definitions, Cloyd M. Chapman, consulting engineer, New York, and chairman of the committee, pointed out that 263 definitions have been approved as standard, 117 now are being reviewed and 213 have not been reviewed. A glossary of all definitions and terms appearing in the standards and tentative standards of the society was issued by the committee during the past year.

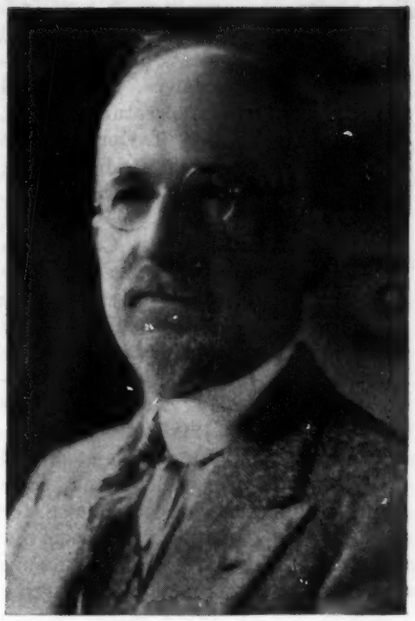
Reviews Research Achievements

The report of Committee E-5 on correlation of research was presented by Dr. H. F. Moore, University of Illinois, Urbana, Ill., chairman. Dr. Moore reviewed the work which has been done and that which is planned by the numerous research committees of the society and joint committees with other organizations. Research projects include the determination of the effect of tin and arsenic on high speed tool steel; the study of the yield point of structural steel; correlation of work on the fatigue of metals; the determination of the effect of temperature on the proporties of metals, and an investigation of the effect of phosphorus and sulphur in steel. The group studying the fatigue of metals is abstracting all of the literature published during the past year on that subject and will publish the information later. Dr. Moore stated that H. C. Mougey, chief chemist, General Motors Corp., Detroit, has been appointed a member of the committee, replacing G. H. Clamer, Ajax Metal Co., Philadelphia, who retires after five years of service.

Debate Test Methods

Chairman W. H. Fulweiler, United Gas & Improvement Co., Philadelphia, presented a report of Committee E-1 on methods of testing. One of the important features of the report was the recommendation of a bend test. The test was developed by A. B. Kinzel, chairman of the section on bend testing. The report was read by Dr. Moore and considerable discussion followed. Dr. L. B. Truckman, bureau of standards, Washington, disagreed with the report on the value of the test, in a written discussion read by H. L. Whittenmore, also of the bureau of standards. W. B. Miller, a member of the committee, stated that the test first was devised to meet the need for a method for testing welds.

A paper by R. L. Templin, chief engineer of tests, Aluminum Co. of America, on, "Determination of the Significance of the Proportional Limit in the Testing of Metals," brought out the variations which may occur in the value of the proprtional limit due to internal strains in the metal, eccentric loading of the specimen, over straining, the use of different types of extensometers and the use of different scales in plotting. The author holds that the yield point is



T. D. LYNCH

Elected president of the American Society for Testing Materials. He is consulting metallurgical engineer, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. A biographical sketch of Mr. Lynch appeared on Page 1754 of June 27 issue of IRON TRADE REVIEW.

easier to determine on a routine commercial testing basis and that it probably is adequate for the needs of the designer and for product specification purposes. Dr. Moore pointed out the need for a new definition of yield point in case that factor is used as indicated by the author of the paper, and suggested a definition.

Effects of Cold Bend Tests

"Tension, Bend and Impact Tests on Reinforcing Bars" was the subject of a paper prepared by Willis A. Slater and George A. Smith, bureau of standards, Washington, and presented by Mr. Slater. The paper reported the results of a series of cold bend tests made on reinforcing bars. The authors found that the tensile strength of the bars generally was affected only slightly by previous bending of the bars.

Give Approval to Wrought Iron Standards

REPORTS of various committees on steel and wrought iron were presented at the Wednesday morning meeting at which J. H. Gibboney, Norfolk & Western Railway Co., presided. Committee A-2 on wrought iron reported the completion of a test program on the effect of phosphorus on staybolt iron and on the progress being made in the development of a questionnaire to determine what constitutes quality in wrought iron. Tentative revisions of existing standards were approved for specifications governing wrought iron pipe, lap-welded and seamless steel, and lap-welded iron boiler tubes. staybolt engine and extra refined wrought iron bars and hollow rolled staybolt iron.

H. H. Morgan, Robert W. Hunt & Co., Chicago, chairman of the sectional committee on standardization of wrought iron and wrought iron steel pipe and tubing, presented a progress report. An increase in the maximum magnetic force from which standard data for magnet-steel shall be obtained was recommended by the Committee A-6 on magnetic properties. The Committee A-8 on magnetic analysis presented a progress report.

Considerable discussion resulted in

the report of committee A-1 to advance from tentative standard to standard the specifications for carbon-steel castings for valves, flanges and fittings for high temperature service. John Howe Hall, Taylor-Wharton Iron & Steel Co., High Bridge, N. J.; Bradley Stoughton, Lehigh university, Bethlehem, Pa., and A. H. Jameson, Malleable Iron Fittings Co., Branford, Conn., objected to the exclusion of the bessemer converter in the specifications. The recommendations of the committee were adopted by the necessary two-thirds majority. Immediate adoption also was secured for proposed tentative revisions in standard specifications for carbon-steel and alloy-steel blooms, billets and slabs for forgings and specifications for wrought solid carbon steel wheels for steam railway service. Tentative standards also were adopted covering specifications for heat-treated, carbon-steel helical springs and specifications for carbon-steel forgings for locomotives. J. B. Young, Reading Co., Reading, Pa., presented the report for the committee.

B. H. Fry, Standard Steel Works Co., Burnham, Pa., presented a report on a series of tests conducted to determine the effect of reduction from ingot to forging in steel forging. He stated that the reduction had little effect on the yield point and tensile strength but improved the ductility. A report of a series of tests on the yield point of structural steel was presented by M. O. Withey, University of Wisconsin, Madison, Wis. A progress report of the joint committee on investigation of the effect of phosphorus and sulphur in steel was presented by G. K. Burgess, director, bureau of standards, Washington. Three tests are being conducted, one to determine the effect of sulphur on forgings, the second to find the effect of sulphur and phosphorus on steel castings, and the third to determine the effect of phosphorus on steel pipe.

DR. SAUL DUSHMAN

Delivered fourth Edgar Marburg lecture at annual meeting of the American Society for Testing Materials. He is assistant director of research laboratory, General Electric Co., Schenectady, N. Y.

The report of the research committee on the effect of tin and arsenic on high speed tool steels was given by N. B. Hoffman, Colonial Steel Co., Pittsburgh. Tests made on steels having 0.4 per cent arsenic and other steels having 0.4 per cent tin indicated the absolute uselessness of the material for drills. The presence of alloys in the amounts indicated was found detrimental for cutters and reamers. Jerome Strauss, Vanadium Corp. of America, Bridgeville, Pa., presented the report of the committee on Iron-chromium, iron-chromium-nickel and related alloys. The committee was appointed recently and the work has been directed toward organization.

At the meeting on refractories and related materials on Wednesday morning, Committee C-8 on refractories recommended for publication a tentative revision in the standard method of test for the softening point of fireclay brick.

Definite Cast Iron Classifications Needed

PHYSICAL properties of cast iron featured the Tuesday evening meeting at which F. O. Clements, General Motors Corp., Detroit, presided. In introducing a symposium on that subject, H. Bornstein, Deere & Co., Moline, Ill., and chairman of Committee A-3 on cast iron, pointed to the need for a more definite classification of cast irons and a complete determination of their physical properties. He explained that the purpose of the symposium was to bring together for the engineering profession a general discussion of the physical properties of cast iron.

Symposium Papers Grouped

The 11 papers on the symposium were divided into several groups with discussion following the presentation of each group. Under the heading, "Classification of Gray Iron Alloys," John W. Bolton, Lunkenheimer Co., Cincinnati, presented five factors influencing the properties of gray iron castings. These include the chemical composition, initial, incidental and final; structure and mechanical makeup of the charge; melting process; thermal and mechanical history; and design and workmanship.

The second paper, "Effect of Section and Various Compositions on the Physical Properties of Cast Irons," by R. S. MacPherran, Allis-Chalmers Mfg. Co., West Allis, Wis., was read by Max Kuniansky, Lynchburg Foundry Co., Lynchburg, Va., in in the absence of Mr. MacPherran. The paper described a study on the effect of section on the tensile strength and hardness of three types of cast iron, namely, a hard, low-silicon gray iron; a soft, high-silicon gray iron, and a high-test cast iron, the latter being alloyed with nickel. Test bars were cast with diameters ranging from 1¼ to 4 inches. Brinell hardness determinations of the entire cross sections of the bars were made and the tensile strengths of the material at the center and at the outer edge were determined. It was found that the two gray irons were appreciably harder at the sides than at the center and that the high-test iron had practically the some brinell hardness throughout.

A paper by W. H. Rother and V. M. Mazurie, Buffalo Foundry & Machine Co., Buffalo, on "Correlation of Cast-Iron Test Bars and Castings," was presented by Mr. Mazurie. The authors reported briefly on the work that has been undertaken on that subject and expressed the belief that in the future specifications will cover bars of several sizes so that with intelligent selection of the bar, the properties of a casting will be predicted accurately.

Presents Fourth Paper

The fourth paper of the group was presented by F. B. Coyle, International Nickel Co., Bayonne, N. J., on the subject "Static Strength of Plain and Alloy Cast Iron." The speaker holds that the only absolute tests for strength of cast iron are those for tension and compression.

James T. MacKenzie, American Cast Iron Pipe Co., Birmingham, in a paper entitled, "Plastic Properties of Cast Iron," presented the results of some original work to show that the ultimate modulus of elasticity is an index of the

resistance to plastic deformation or set. He suggested that resilience, or the area below the stress-strain diagram, and thus a function of both strength and modulus of elasticity, deserves a place on the specifications for cast iron.

Discussions Are Presented

In the discussion following the presentation of the five papers, J. W. Bolton stated that Mr. MacKenzie's claim that set is due to a crushing action of the graphite flakes and is proportional to the amount of graphite, could not be predicated on the data presented. Written discussions by I. Sugimura, Japan, and J. E. Hurst, England, indicated differences of opinion with the conclusions drawn by Mr. MacKenzie. Norman L. Mochel, Westinghouse Electric & Mfg. Co., Philadelphia, told of some work that had been done with his company in correlating data from castings and test bars.

The next paper, entitled "The Fatigue of Cast Iron," by J. B. Kommers, University of Wisconsin, Madison, Wis., presented results on tests of 14 lots of cast iron. He also presented two formulas for determining maximum unit stress. "Impact Testing of Cast Irons" was the subject of a paper by H. Bornstein. He pointed to the need for a standard impact or shock test and stated that Committee A-3 has decided to work toward the establishment of a standard method for making the impact test. Test bars will be made on each of a series of irons of various analyses and these bars will be used to make static tests and to try out various methods of impact testing in use in this country and abroad. The committee hopes to present considerable data and perhaps recommend a standard test for impact at the meeting next year.

A. L. Boeghold, General Motors Corp., Detroit, presented a paper on "Wear Testing of Cast Iron," in which he outlined the various investigations conducted to determine the resisting properties of gray iron. He concluded that a standard wear test is not possible. A paper by E. J. Lowry, Detroit, on "The Machinability of Cast Iron" was read by J. T. MacKenzie. The author spoke of the detrimental effects of abrasive hardness and described various methods for increasing machinability. H. O. Forrest, Massachusetts Institute of Technology, Cambridge, Mass., presented a paper describing methods of making corrosion tests on a series of samples of cast iron pipe. The final paper on the symposium was presented by F. B. Coyle and dealt with the heat treatment of cast iron.

Tentative Standards Proposed

Two committee reports were read at the meeting. The report of the sectional committee on specifications for cast iron pipe was read and approved. H. Bornstein presented the report of the Committee 3-A on cast iron. As recommended by various subcommittees of A-3, the society accepted as proposed tentative standards specifications for gray iron castings for valves, flanges and pipe fittings. Tentative revisions were accepted for chilled cast-iron wheels and the tentative specifications for the arbitration test bar and tension test specimen for cast iron were advanced to standards. Tentative revisions of standard specifications for gray iron castings, for cast iron soil pipe and fittings and for high test gray iron castings were advanced to standard.

Surface Film Stability Influences Fatigue

NUMEROUS papers covering the corrosion and fatigue of metals were presented at the session on Thursday morning at which Vice President T. D. Lynch presided. The effect of stress, time and the number of cycles on corrosion was discussed at length in a paper entitled, "Corrosion of Metals Under Cyclic Stress," by D. J. McAdam Jr., U. S. naval engineering experiment station, Annapolis, Md. Net-damage diagrams indicated that for steel and duralumin the stress-cycle relationship for constant net-damage is an exponential relationship. For ordinary steels and probably for duralumin, any stress cycle, however small, accelerates corrosion.

Data presented in a paper, "The Influence of Corrosion Accelerators and Inhibitors on Fatigue of Ferrous Metals," by F. N. Speller, I. B. McCorkle and P. F. Mumma, National Tube Co., Pittsburgh, follow up a paper presented by the same authors at the meeting a year ago. The authors showed that as in ordinary corrosion, the stability of surface films is a factor of prime importance in corrosion fatigue. Stress and local corrosion tend to damage the protective films and greatly reduce the life of the metal.

Fatigue testing machines of the rotating cantilever type for large specimens were discussed in a paper on, "Fatigue Tests of Large Specimens," by R. E. Peterson, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. These machines were developed originally to test welds and models of large equipment. It was shown that fatigue tests of non-uniform ma-

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Who with L. W. Spring was awarded Charles B. Dudley medal of American Society for Testing Materials. He is testing engineer, Crane Co., Chicago.

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terial, such as weld metal, show less scatter if large specimens are used than if smaller tests are made on specimens of small diameter.

Following the report of Committee A-5 on corrosion of iron and steel, two papers were presented which discussed the results from tests on corrosion made by the committee. The first paper was entitled "A Critical Study of the A. S. T. M. Corrosion Data on Uncoated Commercial Iron and Steel Sheets" and was prepared by V. V. Kendall, National Tube Co., Pittsburgh, and E. S. Taylerson, American Sheet & Tin Plate Co., Pittsburgh. The second paper was prepared by R. E. Passano and Anson Hayes, American Rolling Mill Co., Middletown, O., on "A Method of Treating Data on the Lives of Ferrous Metals." Since some difficulty has been encountered in determining the amount of corrosion on certain types of objects, a method has been developed for making copper replicas of corroded metal objects and the information then is secured from the replicas. The method of making the replicas was described in a second paper by E. S. Taylerson.

Reports were made by committees on zinc coating of iron and steel, screen wire cloth, corrosion of nonferrous metals and alloys and fatigue of metals. In the latter report it was pointed out that the committee believes the method of applying a repeated high stress of some definite magnitude to specimens of different metals and noting the length of endurance of each metal is unreliable as a measure of the ability of the metals to withstand repeated working stresses. It also was stated that the microscope and the electrical resistance method have possibilities in the study of fatigue.

Considerable Attention Given to Die Casting

DIE casting problems received considerable attention at the session on nonferrous metals Thursday night. One of the most interesting features of the session was a paper "Aluminum Alloys for Pressure Die Castings" by Sam Tour, Lucius Pitkin Inc., New York. The author discussed the effects of such impurities as iron, zinc, manganese, magnesium, silicon, tin, etc., on aluminum-copper, and aluminum-copper-silicon, aluminum-silicon, aluminum-copper-nickel-silicon and aluminum-silicon-tin alloys. Information was presented to show how these various impurities sometimes impair and sometimes improve such properties as fluidity, shrinkage, solvent action on iron, hot shortness, strength at elevated temperatures, machinability, polishing properties and plating properties. It was pointed out in the discussion that the iron content and hard spots which appear in nonferrous die castings are of great importance.

Report of Tests Presented

Report of Committee B-2 on nonferrous metals and alloys also devoted considerable attention to die casting. Subcommittee on die cast metals and alloys presented a report on a series of tests being undertaken on die cast alloys. The four main phases of the test include tests of 12 aluminum-base alloys in the form of die cast specimens; tests of 9 zinc-base alloys in the form of die cast specimens; corrosion studies of these aluminum and zinc base alloys, and an analysis of the data and the preparation of specifications. The report was submitted by the chairman of the sub-committee, H. A. Anderson, Bell Telephone laboratories, New York. The basis for the analysis of the test results of the investigation was outlined by W. A. Shewhart, Bell Telephone laboratories, New York.

Data on the endurance properties of aluminum alloys was presented in a paper, "Fatigue Resistance of Some Aluminum Alloys" by J. B. Johnson and T. T. Oberg, Air corps, Wright Field, Dayton, O. The authors showed that while the endurance or fatigue limit has been assumed on the basis of about 300,000,000 cycles, 500,000,000 cycles are insufficient to determine the limit. The results of the investigation have led to a reduction in the allowable stresses used in the design of aircraft propellers. In the discussion, a number agreed with the authors that a great need exists for a short time test of the materials.

The last paper on the program was presented by H. S. Rawdon, bureau of standards, Washington, on "The Effect of Corrosion Accompanied by Stress on the Tensile Properties of Sheet Duralumin." This paper presents results of tests that form a part of a comprehensive study of the corrosion embrittlement of sheet duralumin.

The Friday morning session with H. F. Moore, University of Illinois, Urbana, Ill., as chairman, was devoted to discussion of various problems affecting rolled, wrought and cast nonferrous metals. The first paper entitled "Physical Properties and Methods of Tests of Some Sheet Nonferrous Metals" by J. R. Townsend, Bell Telephone laboratories, New York; W. A. Straw, Western Electric Co., Chicago, and C. H. Davis, American Brass Co., Waterbury, Conn., was abstracted by Mr. Townsend. The paper gives information on the continuation of an investigation which has been undertaken to secure simple and reliable methods to be used in testing sheet nonferrous metals.

A paper entitled "Bearing Bronzes With and Without Zinc," by H. J. French, formerly of the bureau of standards, Washington and E. M. Staples, Bunting Brass & Bronze Co., Toledo, O., created considerable interest. The authors hold that bronze with less than 4 per cent tin is unsuited for general bearing service; that bronzes with less than 5 per cent lead appear to be suited for service only where lubrication can be maintained; that bronzes containing more than about 5 per cent lead are suited best to operate for short periods in the absence of lubrication and that the addition of 4 per cent zinc to the bronzes in general had small influence upon the properties of the bronzes.

Authors' Work Profitable

In the discussion which followed, H. E. Smith, New York Central railroad, stated that zinc never is added to a bearing intentionally and that when present, it indicates the use of ordinary yellow scrap brass. W. M. Corse, Washington, stated that the work done by the authors may effect a saving in the number of types of bearings used in the automobile industry. The program of tests will be continued over a period of several years and white metals of babbit also will be tested. A. L. Davis, Scovill Mfg. Co., Waterbury, Conn. suggested that the metal the bearing is in contact with is of considerable importance and suggested a study of iron and steel.

The report of Committee E-4 on metallography contained information on the work that is being done by a number of industries and other organizations in using the X-ray equipment to examine metals. The committee recommended the advancement to standard of the tentative recommended practice for radiographic testing of metal castings.

Refractories Institute Elects New Officers

Porter S. Kier, Kier Fire Brick Co., Pittsburgh, was elected president of the American Refractories institute at the business meeting held in Cleveland June 25. He succeeds J. M. McKinley, North American Refractories Co., Cleveland. This session did not include the presentation of the usual technical papers, the program consisting only of business matters. A meeting has been scheduled for Sept. 24-25 at Columbus, O., at which time the regular annual technical program will be carried out.

Other officers elected at the recent meeting are as follows: First vice president, W. B. Coullie, Harbison-Walker Refractories Co., Pittsburgh; second vice president, Roger A. Hitchins, General Refractories Co., New York; treasurer, C. C. Edmunds, McLain Fire Brick Co., Pittsburgh; secretary, Dorothy A. Texter, Oliver building, Pittsburgh.

Directors of the institute are as follows: U. S. Clark, Howard Co., New Haven, Conn.; G. R. McClintock, Osceola Silica & Fire Brick Co., Osceola Mills, Pa.; P. S. Kier, Kier Fire Brick Co., Pittsburgh; E. F. Myers, Ironton Fire Brick Co., Ironton, O.; J. Claire Evans, Denver Fire Clay Co., Denver, Colo.; J. T. Roberts, Stockton Fire Brick Co., San Francisco; J. L. Green, Laclede-Christy Clay Products Co., St. Louis; and C. H. King, Evens & Howard Fire Brick Co., St. Louis.

Working on Diesel Fuel Oil Specifications

More than 250 engineers and guests met at State College, Pa., last week for the second national convention of the oil and gas power division of the American Society of Mechanical Engineers. Many important reports of committees were presented at the technical sessions on June 27 and 28.

One of the most important discussions centered around the fuel oil specifications, as presented by the special research committee on this subject. All engineers present at this discussion were in agreement on the urgent need of standard specifications covering diesel fuel oil. However, it was pointed out that many difficulties must be overcome before such specifications can be prepared and approved. The committee, which is headed by Henry C. Dinger, head, United States Navy Engineering Experiment station, Annapolis, Md., expects to have specifications complete, ready for adoption at the next division meeting.

John L. Goldthwaite, Allison Engineering Co., Indianapolis, presented a careful study of high-speed oil engine pumps, in which he told of successful operation of fuel pumps at 2000 revolutions per minute.

Other papers presented included "Diesel Education," by Roswell H. Ward, managing editor, National Aviation Corp., New York; "High-Speed Diesel-Engine Design," by Otto Nonnenbruch, chief engineer, oil engine department, I. P. Morris & De La Vergne Inc., Philadelphia; and "Maintenance and Repair of Marine Diesel Engines," by Louis R. Ford, United Dry Docks Inc., New York.

An exhibit of diesel engine accessories was held coincident with the meeting, with some 20 manufacturers represented. This exhibit, as well as the meeting is expected to form part of an annual institution to be held at State College under the combined auspices of the American Society of Mechanical Engineers and Pennsylvania State college.

Foundrymen Will Meet at Taunton

The July meeting of the New England Foundrymen's association will be held Wednesday, July 10, at the Wampanoag Motor club, Taunton, Mass. Following a lunch, golf matches will be run off, and there is to be a baseball game and other sports. The dinner in the evening will be informal. It will be the first time in the history of the association that a meeting has been held at Taunton.

The August meeting of the association will be at Providence, R. I.

Steel Fabricators Rush Work on New York's Tallest Building

ERECTION of the 65-story Bank of Manhattan building, New York's tallest structure, which is to rise 840 feet on the block bounded by Wall, Nassau, Pine and William streets, has started. All the grillages having been fabricated, were shipped to location. Contrary to the usual practice of awarding the contract on the basis of completed plans, the owners employed Levering & Garrigues to design the steel work as well as to fabricate and erect it. Since drawing the preliminary sketch the size of the building has been increased by the purchase of additional land.

Assisting the steel contractors is the entire staff of Purdy & Henderson, structural engineers, New York, and these two organizations working together and checking each other on the loads and wind strains, notwithstanding an important revision of the plans made to adapt them to the requirements of the bank, had the general plans in such shape by May 1, that it was possible to start a force of 60 draftsmen ordering material and detailing the work for the fabricating shop.

The design was practically completed by May 15, the rolling of the structural shapes having been started in advance of that date. Levering & Garrigues rushed to completion a new drilling shop at their plant at Dunellen, N. J. By May 20 fabrication of the grillage was started and shortly afterward the plants of Bethlehem Steel Co. at Bethlehem and Steelton, Pa., were added to the working forces at Dunellen.

To forestall delay in beginning erection of the steel work, partial foundations were commenced prior to razing the old buildings occupying the site. Simultaneously with the erection of the steel work, the excavation of the building was carried on and adequate foundations completed. The schedule calls for the completion of the steel erection by Nov. 1. The whole building is to be finished by the builders by May of next year.

Starrett Bros. Inc., a subsidiary of the Starrett Corp. are constructing the new building, from the plans of H. Craig Severance, architect. Yasuo Matsui is associate and Shreve & Lamb are consulting architects on the building.

By completing the building on May 1, 1930, a new record will have been established, since construction of such a building normally would have required two years. In view of the large investment involved and the value of the site for offices, the job has been especially organized for quick erection. This will be possible in view of the co-ordination of the engineering staffs upon the structural steel work. The Hooker building, at 25 Pine street, will not be torn down until March, 1930, when construction of that part of the building will be begun, and this section will be completed in the fall of 1930.

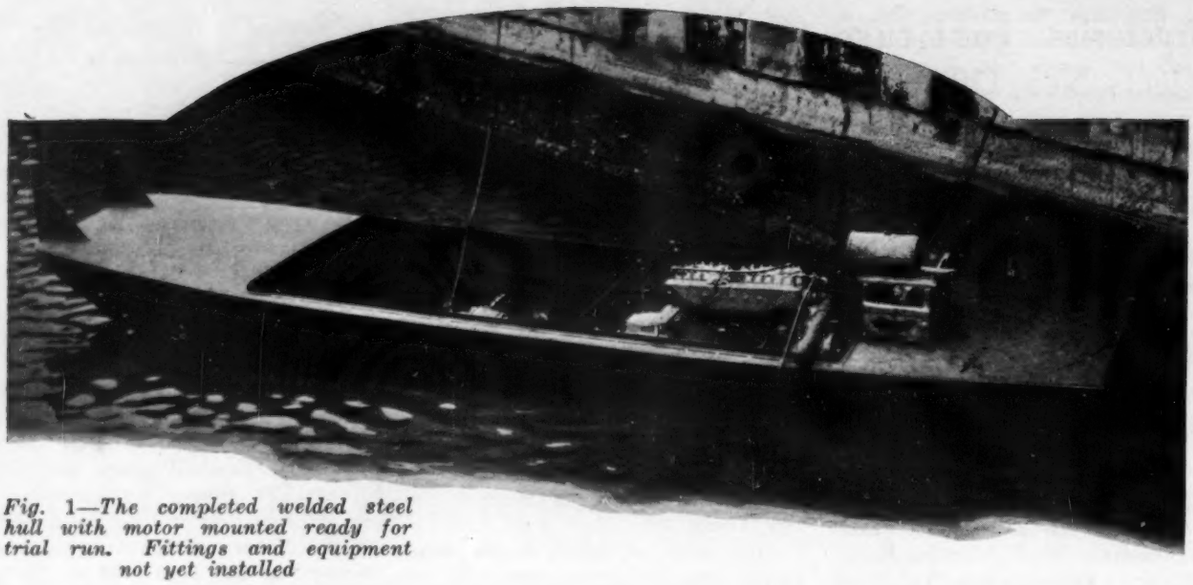


Fig. 1—The completed welded steel hull with motor mounted ready for trial run. Fittings and equipment not yet installed

Army Engineers Building Fleet of Welded Steel Power Boats

By John Van Horn

Field Engineer, Lincoln Electric Co., Cleveland

OVER a year ago the engineers corps of the United States army constructed and launched a fleet of seven welded steel power boats. As a result of the continuous service of these boats, the engineers now are building a second fleet of three by the same method. These craft will be used as carriers and tow boats on the Mississippi river and its tributaries.

The launches are constructed entirely of steel, all permanent connections being made by the electric arc welding process. The overall length of each craft is 28 feet; the breadth 7 feet; and the depth 2 feet 4½ inches; the freeboard, of course, varies with the load, the draft being very little when the boat is not loaded. The boats have flat bottoms, slightly stepped close to the stern and have a rather sharp rise at the bow effecting a broad, flat prow, similar to the seaplane type.

Some idea of the construction of these boats may be gained from the accompanying illustrations. Fig. 3 shows the partially completed steel skeleton of a hull. Each rib is made from one piece of channel iron, 1½ x 9/16 x ¼ inch, with exception of the frame at the rear end of the forward bulkhead which is of 1½ x 1½ x ⅜-inch angle iron. The two floor stringers are 3 x 3 x ⅜-inch angles punched and bolted in position to each frame, prior to arc welding. Angle iron stringers also are welded to each side of the channel frames. These stringers are also punched and bolted to the frames to maintain perfect alignment until welded. Deck beams over the fore and aft bulkheads are 1½ x 1½ x ⅜-inch angles, welded directly to the top ends of the frames. Clamps formed from flat plate are welded to every other frame to carry the deck on both sides of the open cockpit.

A view of the interior of one of the

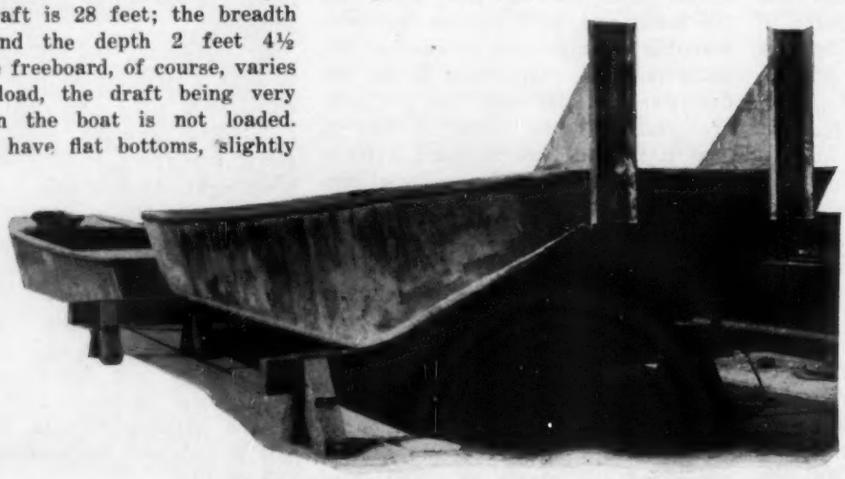


Fig. 2—Steel plate arc-welded to an all-steel framework makes a strong durable and leakproof hull

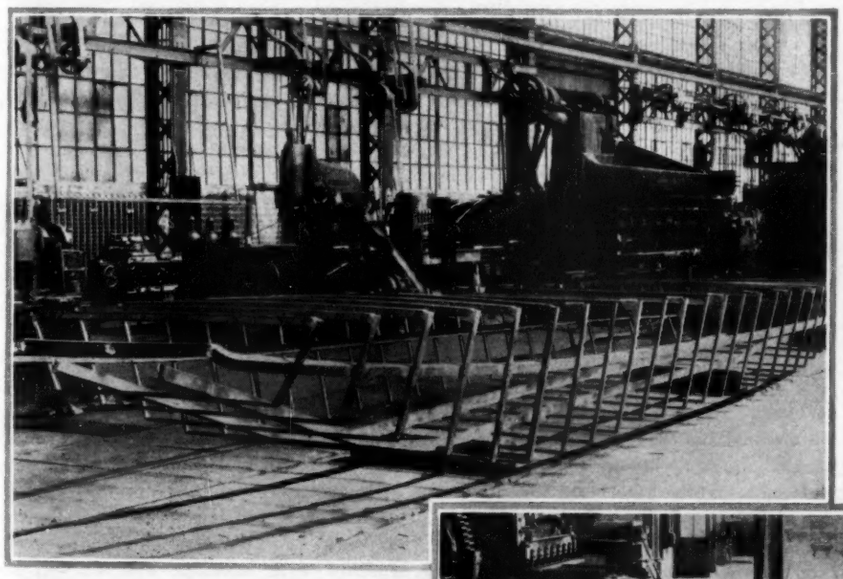
boats from the uncovered aft bulkhead looking forward is shown in Fig. 4. The engine base or mounting shown in this illustration is constructed entirely from ¼-inch steel plate, fabricated by arc welding and permanently joined to the floor or bottom of the craft and to the two floor stringers by welding. The engine base is braced on two sides by triangular pieces of steel plate with bottom edges crimped and welded to the bottom plates. The coaming around the cockpit consists of one piece of 2 x 2 x ¼-inch angle on each side and end. As can be seen in Fig. 4, the rear end of the forward bulkhead is fabricated by riveting, so that it may be removed when desired.

The bottom and side plates are joined to the frames by short fillet welds about 1½ inches long and approximately 7 inches apart. The bottom is of ¼-inch plate, the sides of 3/16-inch plate and the deck of No. 10 gage sheet steel. Fig. 2 shows a completed hull, in foreground, on which can be seen the continuous welds along the edges of bottom side and deck plates. The bumpers at the bow of the boat are for pushing barges. They are constructed of 8 x 13¾-inch channels, braced by triangular pieces of 3/16-inch plate, and 2 x 2 x 3/16-inch angles attached to the deck and prow by arc welding.

Each boat is to be powered by a 125-horsepower six-cylinder gasoline engine equipped with a reduction gear having a ratio of 3 to 1. With this arrangement the boats obtain an average speed of approximately 13 miles per hour when running light. Fig. 1 shows a completed hull with engine mounted, but before fittings and equipment have been installed, ready for a trial run.

Design a Tribute to Skill

The unique design and construction of these boats is a distinct tribute to the ingenuity and engineering skill of the engineers corps. The success of the design and construction of these arc welded all-steel motor launches, proven after a year's operation, marks a distinct step towards a new method in the building of power boats. Not only is utilization of steel a strong and enduring material, an advance in small boat construction, but also the ability of the welding process to make a steel hull literally one piece, which means a strong, durable craft free from leakage.



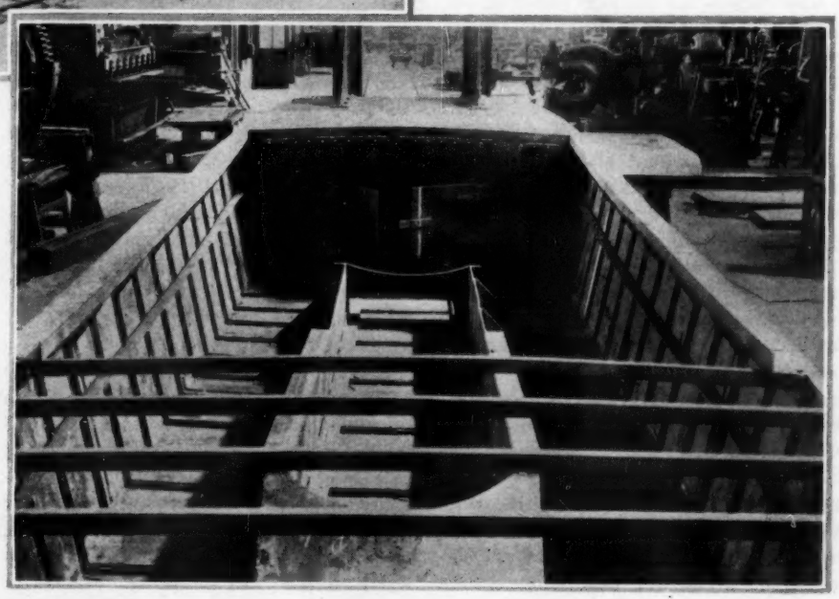


Fig. 3 (Upper left)—Partially completed steel skeleton of hull fabricated entirely by electric arc welding

Fig. 4 (Lower right)—Interior view looking forward from the aft bulkhead. The engine mounting is constructed from ¼-inch plate

Bureau Seeks Cold Bend Bar Test Method

A series of tests has been made by the bureau of standards in an effort to find a method of making cold bend tests of uniform severity for reinforcing bars of all sizes and degrees of hardness, and finding an impact test suitable for detecting brittleness in such bars.

A standard test for quality of concrete reinforcing bars consists in bending them, without reheating, through 90 to 180 degrees with with the radius of bend equal to one, two or three times the diameter of the bar. The angle and radius of the bend depend generally upon the size and hardness of the bar. The difference in the angle and radius of the bend required for different types of bars causes differences in the severity of the tests applied to the different bars. Thus it seems that the tendency is to suit the specification to what the bars of different grade will meet successfully rather than to the service demanded of the bars in the bending for use as reinforcement.

Lead and copper ores produced in 1928 were important sources of silver as a by-product, contributing largely to the $18,091 return from silver recovery, according to the United States bureau of mines.

Executives Seek Broader Markets for Flat-Rolled Products

Annual Conference at White Sulphur Springs Crystallizes Conception of Increased Sheet Steel Volume for Farm and Agricultural Uses

PRESENTED with the first comprehensive analysis of one of its major markets, the rather vague impression of flat-rolled steel executives that active steps should be taken to sound the possibilities for additional tonnage was crystallized into a definite conception of the increased quantities of steel that can be sold in farm and agricultural markets and of the means through which this enhanced volume may be obtained. This appreciation of markets and merchandising was brought to the executives of the flat-rolled steel industry at their annual conference last week at White Sulphur Springs, W. Va. To most of the members present the survey and digest of the farm market and the inadequacy of the sales methods now in vogue came as a revelation.

This subject, with which the conference was opened on Monday morning, June 24, was the dominating one throughout the three-day meeting. Never before has the mind of this important department of the steel industry been so keenly focused on the vital problems of selling steel sheets, of how much can be sold, of where the sheets can be sold, of why they can or cannot be sold, of the factors that influence the ultimate consumer to say "steel" or to ask for a material competing with steel.

Surveys Farm Market

R. H. Griswold, Griswold, Eshleman Co., Cleveland, presented the results of a field analysis of the farm market which indicated a potential consumption of 30,000,000 to 40,000,000 tons annually of galvanized sheets for roofing and about 27,000,000 tons of the same material each year for farm equipment such as brooders, tanks, feeders and similar devices. He showed how the sale of sheet steel products to consumers in agricultural districts today is largely in the hands of dealers who are most favorably disposed to competitive products such as composition roofing. The survey he reviewed pointed conclusively to weakness in the present system of distribution, to unprofitable commissions of profits for the dealers who serve rural communities, to lack of thought in making sheet steel easily applicable for roofing purposes, and to a score of other reasons which explain why sheet steel has failed to exhaust to any appreciable proportion the market opportunities on the farms of the nation.

Farrell Sanctions Efforts

The remarks of James A. Farrell, which followed this market analysis, endorsed as worthwhile efforts to enlarge the markets for steel products. This expression from the president of the United States Steel Corp. was viewed as deeply significant, as were his comments on the advertising activities of products competitive with steel in literary journals instead of in technical journals. Mr. Farrell considers technical journals the logical mediums for imparting technical information to users of steel mill products. The complete address of Mr. Farrell will be found on page 6 of this issue of IRON TRADE REVIEW.

Eugene P. Thomas, vice president of the United States Steel Corp., asserted that research laboratories maintained by leading producers benefit the industry as a whole. Cartels and syndicates have improved technology and sales of foreign makers.

Mr. Thomas believes increased foreign sales are becoming a factor contributing to the stability of the domestic steel market. He commended the study by the National Association of Flat-Rolled Steel Manufacturers of production and market problems. Advertising of steel substitutes he declared, challenges the steel industry. He suggested that the association collaborate with manufacturers of steel products.

A supplementary report of a similar survey which is being made by the Sheet Steel Trade Extension committee into the general markets for sheet steel and strip mill products was presented by Howard Spohn, Gardner Advertising Co., New York. W. S. Doxsey, Penton Publishing Co., Cleveland, told how "Making Markets," monthly publication of the Trade Extension Committee co-ordinates the general, the farm, and the business paper advertising and merchandising these activities of the committee to the fabricators and distributors of sheet steel and sheet steel products.

In his address before members of the industry, G. H. Charls, president, National Association of Flat Rolled Steel Manufacturers, declared associations must seek to achieve their desired objectives through co-operation rather than through compulsion. These organizations, each representative of an industry, must be founded on integrity of purpose and on good faith. They must, he believes, diligently and intelligently provide the facts to govern production, sales and expansion, as well as the ethics of their industry. He uged the standardization and harmonizing of economic ideas and declared associations must declare war on narrow-minded business misjudgment.

Condemn Price Cutting

Price cutters came in for severe criticism from Mr. Charls who stated that the secret rebate of today is the published price of tomorrow, that the price cutter who buys his orders sells neither profits, nor prosperity. Industry, he insisted, must have the courage to adjust economically production with demand and to sell its products at a price commensurate with cost, service, and invested capital. Justice must be demanded and waste in industry eliminated. The temptation to expand production after a period of prosperity must be resisted. He criticized the executives of the industry for failing to maintain discipline and permitting salesmen to become bosses of distribution.

Present sales methods in the industry also were sharply questioned by Severn P. Ker, president, Sharon Steel Hoop Co., who presided at the banquet held Monday evening, June 24. Mr. Ker emphasized the "disgraceful lack of profits" the industry has earned in the past five years, despite satisfactory production sched-

ules. He reviewed some of the failures that have occurred in the industry during the past 20 years and warned the companies represented at the function against the pitfalls which are present in the industry today as they were in the past. Mr. Ker introduced the speaker of the evening, Commissioner W. E. Humphrey of the federal trade commission who outlined the helpful co-operation the commission is extending to industries that are anxious to eliminate unfair and uneconomical trade practices now prevalent.

Commissioner Humphrey said the federal trade board receives 45 complaints of unfair practice monthly. More than 90 per cent of those accused "cease and desist," thus expediting the disposition of cases and avoiding an average cost of $10,000 for each case brought to the courts.

Most decisions of the United States Supreme Court on interpretation of the antitrust law are divided, he declared. Five hundred companies in the past three years have agreed to abandon alleged unfair practices, he said. More has been accomplished in eliminating questionable methods in the past year than in any previous year in the history of the commission's existence.

Urges Co-operation of Public

Commissioner Humphrey reviewed the trade practice conference method for eliminating unfair practices and urged co-operation of the public in the commission's fight against fraudulent advertising. Publishers of 6000 magazines and newspapers in conference have agreed to help thwart this fraudulent advertising.

Conferences help to eliminate uneconomic, as well as unfair practices, Commissioner Humphrey pointed out.

A feature of the meetings of unusual interest to the members was the address of Griscom Bettle, Edward G. Budd Mfg. Co., Philadelphia, who described the development of the monopiece body for the Dodge division of Chrysler Motor Car Co. This development resulted in a reduction in the number of parts used in the automobile body from over 500 in a combination wood and steel body to approximately 120 in an all-steel body. This type of body construction, he explained, was made possible by the development of an especially wide and long sheet. Using average figures representative of both the larger and smaller closed cars, he showed how the adoption of all-steel bodies by the automotive industry would mean an increase of 370,000 tons of sheets a year, based on the present rate of production of automobiles.

That the appreciation of the efforts of the Sheet Steel Trade Extension committee to broaden the markets for sheet steel was not confined to executives attending the meetings at White Sulphur Springs was shown by the spirit of commendation expressed in telegrams read at the Wednesday morning conference by G. H. Charls. These messages endorsed the work of the Flat-Rolled Steel association and indicated a hearty approval of the trade extension activities. Telegrams from the following men were read:

James A. Campbell, president, Youngstown Sheet & Tube Co., Youngstown, O.; George M. Verity, president, American Rolling Mill Co., Middletown, O.; Henry H. Roemer, president, Continental Steel Corp., Kokomo, Ind.; E. J. Kulas, president, Otis Steel Co., Cleveland; E. T. Weir, president, Weirton Steel Co., Weirton, W. Va.; L. E. Block, chairman of the board, Inland Steel Co., Chicago; and Isaac M. Scott, president, Wheeling Steel Corp., Wheeling, W. Va.

Steel Founders Are Appreciating Necessity for Group Action

A NEW consciousness of their industry came to members of the Steel Founders' Society of America at their midsummer meeting, June 27-28, at White Sulphur Springs, W. Va. And with this new consciousness also came a broader appreciation of the advantages of attacking the problems of their industry as a group, rather than as individuals.

Thursday morning, June 27, the steel foundry executives listened to an address by Homer J. Buckley, president, Buckley, Dement & Co., Chicago, direct mail and merchandising specialists. Mr. Buckley told the attending members that selling will be their major problem during the next decade; that steel foundries will have to guard against competing products; and that they must work collectively to strengthen their organization under capable leadership.

Steel foundries, he pointed out, are a source of essential service to industry. Through friendly competition, he believes, they may work to become an indispensible factor in the success of their customers, making progress in this respect impossible to achieve when bitter rivalries, complaceny and jealousies prevail. Immediate problems of the society, as sensed by Mr. Buckley involve the expansion of membership, improved profits and greater tonnage.

New Secretary Plans Survey

After being introduced by President John E. McCauley, Birdsboro Foundry & Machine Co., Birdsboro, Pa., the new secretary of the organization, Granville P. Rogers, briefly discussed his plans for undertaking and enlarging the work of the society. The secretary plans a three-month survey of the industry. Upon the facts revealed in this survey will be based a plan of operation which will be brought before the executive committee early in the fall.

New offices of the society, Mr. Rogers announced, have been opened at 932 Graybar building, New York.

During the course of the two-day meeting, A. H. Jameson, Malleable Iron Fittings Co., Branford, Conn., told of activities of the American Society for Testing Materials affecting steel castings producers. Mr. Jameson, who had attended the Atlantic City meetings of this organization before coming to White Sulphur Springs, told of the passing by committee A-1 of the report on valves, flanges, and fittings for high-temperature surfaces permitting the use of only electric and open-hearth steel, and excluding crucible steel.

Asks Serious Consideration

He warned members of the Founders' society against what he sensed as a tendency toward the exclusive use of electric steel for these parts and suggested that the situation be considered seriously by the executive committee. J. E. Galvin, Ohio Steel Foundry, Lima, O., suggested that the new high-speed cutting steels which are being introduced might very likely cause machine tool designers to substitute steel castings for gray iron castings to gain the additional strength and rigidity required to meet the stresses and strains imposed by the use of these new cutting tools. Mr. Galvin also reviewed some of the expenses thrust upon steel foundries by customers who leave inactive patterns with foundries for indefinite periods. In his estimation, foundries should not be responsible for patterns that have been inactive for two years or longer.

Operates Four Induction Furnaces

Foundry Obtains Exact Control of Special Alloy Analyses

Two 400-Pound and Two 1000-Pound Units Are Installed

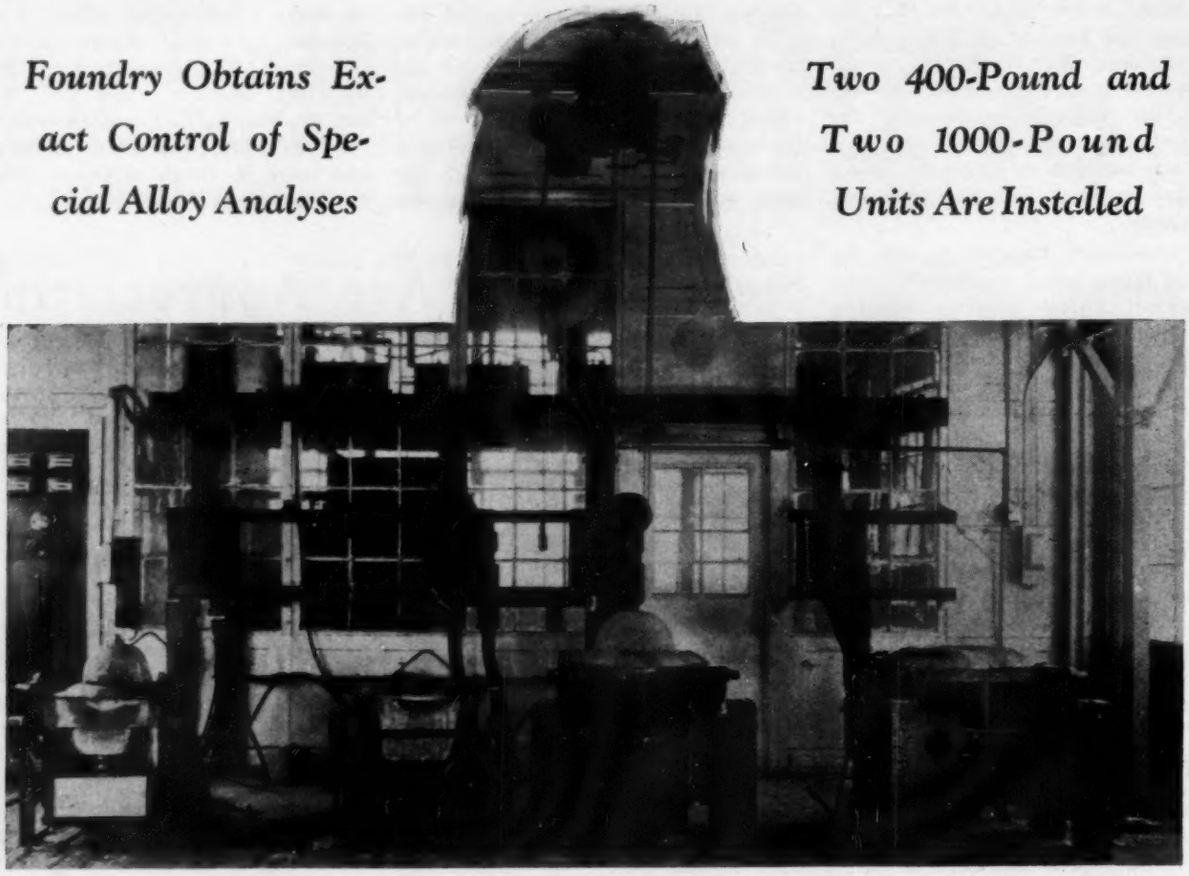


Fig. 1—Arrangement for four coreless induction furnaces and the electric hoist used for tilting them

THE pioneer installation of coreless induction furnaces into the foundry field was made at the Beaver Falls, Pa., plant of the Babcock & Wilcox Tube Co., in January, 1927. Four furnaces of the Ajax-Northrup type manufactured by what is now the Ajax Electrothermic Corp., Trenton, N. J., a division of the Ajax Metal Co., were placed in service at this plant and the original equipment now has been in daily production for over two years. Results and experiences obtained furnish interesting data on this type of furnace.

Metals most usually melted are of the heat, chemical and abrasion resisting type requiring pouring temperatures of from 2900 to 3200 degrees Fahr. High-speed steel and other alloys occasionally are made. The average daily production of this foundry is 4000 pounds per 9 hour day, although frequently this is increased to 8000 pounds per day by running two shifts.

The outstanding advantage the installation has shown is its ability to reproduce analyses time after time. For example, in a series of 25 consecutive heats of an alloy containing 28 per cent chromium, 8 per cent nickel, and 0.50 per cent carbon, the variation in chromium was not over 1.5 per cent between the high and the low; the nickel did not vary 0.75 per cent from the high to the low; and all carbons are within 0.06 per cent. This series of heats was made from miscellaneous scrap.

Different Alloys Given

Following are some of the different alloys which are run in the furnaces:

Chromium, per cent	Nickel per cent	Carbon, per cent	Alloy resistant to
18.80	9.0	0.20	Heat and corrosion
25.00	10.0	1.15	Abrasion
18.00	0.0	0.25	Corrosion
16.0-20.0	65.0-70.0	0.50	Heat
22.0	23.0	0.40	Heat
28.0	6.0	0.40	Heat

The furnaces are energized by high-frequency current supplied by a motor generator set. The motor driving the generator is the synchronous type rated at 250 horsepower, 2200 volts, 3 phase, 60 cycles. The generator is single-phase, 150 kilowatt.

The motor generator set as well as the starting switch, condensers, etc., are housed in a room, which is closed off from the foundry, but is adjacent and under the same roof. Ventilation is provided to prevent overheating, and the room is kept free from dirt and fumes. The generator control panel which, with condenser controls, regulates the furnace production is mounted in the wall of the generator room. The face of the panel with meters and switches is toward the furnaces, and the operator has but a few steps to go from his furnace to the controls.

Four furnace units, two of them holding 400-pound charges and two holding 1000-pound charges, are mounted in a row about 6 feet out from the generator room wall as shown in Fig. 1. Switches are provided so that any one of the four furnaces can be thrown into service in a few seconds. All four furnaces are of the type which tilt around the spout and are tilted by means of an electric hoist, operating on an I-beam over the back of the furnaces but well above them to give ample head

room. Fig. 2 shows the simple wiring diagram of the installation.

Metal is poured from the furnace into ladles which have been preheated with oil and from the ladles into the molds. When small molds are poured, and the time for pouring off the heat extends over several minutes, a small amount of power is turned on the furnace to maintain a constant temperature.

The following log shows typical results obtained with analysis of scrap charged and analysis of the resulting pour:

	Chromium, per cent	Nickel, per cent	Carbon, per cent
Metal charged	19.6	8.60	0.213
Metal poured	18.0	8.96	0.190

Size of pour—300 pounds.

Crucible—Acid; 156th heat.

Another log which shows the meter readings, etc., during a typical 1000-pound melt of 22 chromium, 23 nickel alloy is as follows:

Time, minutes	Generator volts	Generator amperes	Generator kilowatts
0	900	200	175
5	1000	182	175
20	1000	175	175
35	970	185	175
50	900	200	175
65	940	200	175
80	900	200	175
95	900	200	175
110	900	200	175
120		Poured	

Pouring temperature—2900 degrees Fahr., minimum.

Time to melt—2 hours.

Kilowatt-hours, measured at input to motor—490.

Kilowatt-hours per 2000 pounds—980.

Average killowatt-hours per ton on the various alloys are approximately 950 in the 1000-pound furnaces and 850 in the 400-pound furnaces. These figures are measured at input to the motor and include power used to hold the temperature constant during the pouring period. When high-speed steel ingots are poured, some installations have shown as low as 660-kilowatt-hours per ton.

Metals usually are melted in acid linings which give some 200 heats before requiring replacement. The four-furnace installation, of which only one furnace operates at a time, gives excellent means for keeping the production of the shop up to normal. The spare furnace in each size permits repairs to refractories without interruption of the melting schedule.

The equipment now is well past the experimental stage, and the data given are typical of day in and day out performance. Results have justified the consideration of a somewhat larger installation in the future.

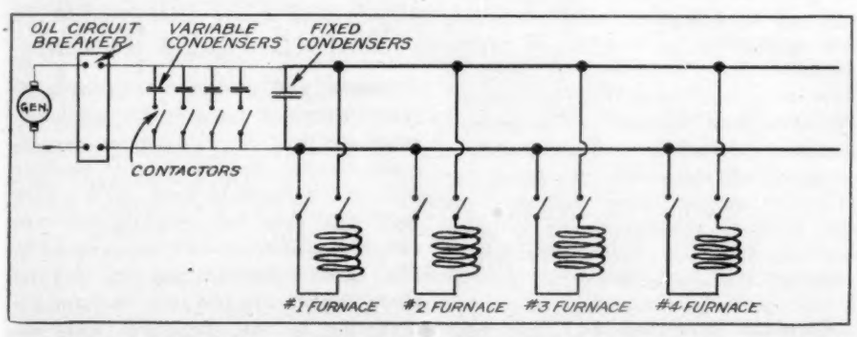


Fig. 2—Schematic wiring diagram of induction furnace installation

Structural Steel and Not Wrought Iron Was Used in First Skyscraper

CAREFUL analysis of material removed from the Tacoma building during its demolition in Chicago recently affords conclusive proof that structural steel can successfully carry its designated load and withstand deterioration through corrosion and other sources. Claiming the distinction of being the first building erected according to the skyscraper type of construction, it was 13 stories high. The building was designed by Holabird & Roche, architects, and erected in 1887 by the George A. Fuller Construction Co.

In this type of construction the walls were supported on the steel framing. It differed from other construction in that, previously, walls were self-supporting. Engineering and architectural records regarding this building, with the exception of the drawings, were destroyed by fire. Therefore, it remained for the analysis to disclose facts surrounding the materials. It was found that the Tacoma building had walls which were carried at each floor on steel spandrel beams attached to cast-iron columns. According to competent authorities it was the first building to reveal the startling spectacle of bricklayers starting to lay walls midway between roof and ground.

Columns of Cast Iron

Inspection of the drawings by representatives of the American Institute of Steel Construction indicates that the framework of this building was originally designed to make use of either rolled and fabricated shapes or cast iron for all supporting columns. The cast iron columns used to bear the perpendicular load had a circular cross section. This shape provided efficient strength and rigidity. Some of the columns were cast with four rectangular ribs spaced 90 degrees apart. They were bolted together from end to end, and were cast with brackets to which beams were bolted.

Inasmuch as the automatic riveter had not been invented, few rivets were used in the fabrication of the structure. Such riveting as was done when the Tacoma building was erected was by a hand hammer which was known as a "flogging hammer." This hammer had a long handle which gave added impress to the swing of the riveter. Rivets were used only in places where steel joined to steel, and bolts where the steel was joined to cast iron brackets. Rivet heads were as neatly finished as any observed in a modern structure today.

Analysis Reveals Wrought Iron

Henry Penn, district engineer, American Institute of Steel Construction, Chicago, submitted samples of the material taken from the building to Robert W. Hunt Co., Chicago, for investigation. Results of the analysis of one sample of metal frame were as follows: Carbon, 0.12 per cent; manganese, 0.40 per cent; phosphorus, 0.063 per cent, and sulphur, 0.032.

"The analysis indicates this material to be steel and not wrought iron. The manganese content especially is significant. An etching test made on a portion of the metal frame further verifies this conclusion," the report said.

Steel from the old building has been subjected to chemical analysis, etching and microscopic examination. There was no evidence of deterioration in the crystalline structure, and, it is believed, the framework of this building would have been good and efficient for many years to come. Original location markings in paint were as fresh and bright as when the beams were first covered. The material in the webs of the beams as originally rolled was less than ½-inch in thickness, yet still perfect and capable of carrying loads when the sections were removed.

Buying Power of New England Shown

The market data handbook of New England, recently published, makes possible for the first time a comparison between the various markets of New England from the points of view of purchasing power and purchasing habit. In this volume New England is shown to consist of 13 major trading areas, 32 wholesale trading areas and 114 retail trading areas. For each of these districts statistics are given which show the present economic status and also the economic trend. Such items as value added by manufacture, bank deposits, income tax returns, new automobile sales, magazine circulation and population are presented in statistical form, for each district.

The volume represents part of a survey of New England's industrial condition being made by the domestic commerce division of the United States department of commerce. Other parts of this survey including the industrial structure of New England and the commercial structure of New England are now being prepared.

Blast Furnace Slag for Building Concrete

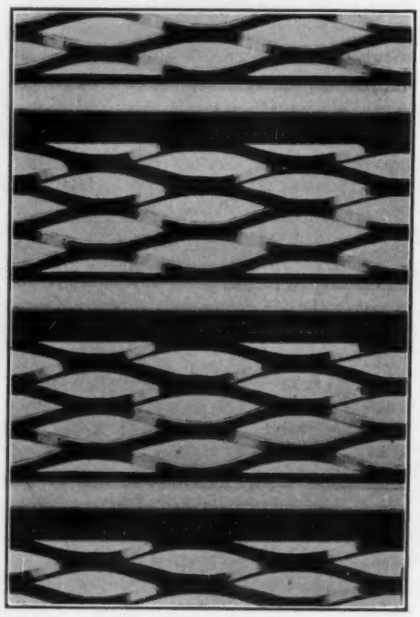
National Slag association, 937 Leader building, Cleveland, has published as symposium No. 12 a 45-page pamphlet dealing with the use of blast furnace slag in slag concrete for general building construction. A comprehensive survey has been made of structures built in the United States during the twentieth century, in the construction of which slag concrete has been used. All these are classified as to type and amount of slag used.

Flat Rib Metal Lath Is Rigidly Designed

A new rigid and economical flat rib metal lath has been designed and is being manufactured by Truscon Steel Co., Youngstown, O., for use in all types of construction as a base for interior plastering. Advantages claimed for this product are that it permits an appreciable saving of plastering and is unusually rigid, the uniformly deep ribs providing additional structural reinforcement.

The lath consists of ⅛-inch deep ribs separated by less than an inch of mesh in the form of small diamond-shaped openings, as shown in the accompanying illustration. The narrow steel strands forming the diamonds are flattened to give proper resistance to the penetration of excess plaster. The design of the mesh is such that its flatness is utilized to provide greater lateral rigidity. The saving in plaster is said to amount to as much as 20 per cent.

The new lath is uniformly smooth and easy to handle in erection. The ribs make the sheets rigid, facilitating placing on the studs. Its design is such that it can be bent or formed to contour, and thus is suitable for fireproofing columns, as a base for plaster on cove ceilings, constructing false beams and similar work.



New flat rib metal lath featuring rigid design

The lath is manufactured in weights of 2.75, 3.0 and 3.4 pounds per square yard, and in sheets 24 inches wide by 96 inches long.

Plan Research Program

A program for research on the properties and use of wire rope, under the auspices of the American Society of Mechanical Engineers and sponsorship of the Engineering Foundation, was considered by a group of representative manufacturers and users of wire rope, meeting at headquarters of the American Society of Mechanical Engineers recently. The tentative program will be widely circulated for criticism among those interested in the problem preliminary to a large conference in New York in the fall to start off the project.

Germany furnished 94.7 per cent of the fuel briquets imported in 1928.

Skyscrapers of United States Are Listed

Statistics have been compiled by the American Institute of Steel Construction Inc. showing the height and floor areas of large steel framed buildings of the United States. The proposed Chicago tower, now known as the Crane tower, will be the highest and largest building in the world. The Equitable building is the largest structure in New York although not the highest. The figures are as follows:

Building	Ht. in Floors	Ht. in Feet	Rentable Area sq. ft.
Chicago tower, Chicago	75	880	3,639,104
Bank of Manhattan, New York	63	836	.....
Chrysler, New York	63	808	.....
Woolworth, New York	58	792	438.933
Terminal tower, Cleveland	52	708	560,000
Metropolitan, New York	50	700	1,085,663
Lincoln, New York	52	700	915,000
Penobscot, Detroit	47	665	400,000
Irving Trust, New York	50	638	.....
10 East Fortieth, New York	46	635	342,000
Chanin, New York	55	621	710,000
Singer, New York	41	612	238,940
Amer. Ins. Union, Columbus, O.	48	555	409,000
Equitable, New York	43	550	1,236,000
Bankers' Trust, New York	39	539	209,365
Furniture Mart, Chicago	34	478	1,514,637
Straus, Chicago	34	410	400,000
Graybar, New York	31	400	1,005,000
Cent. and Com. bank, Chicago	21	300	700,000
Illinois Merchants, Chicago	21	280	887,500
Union Trust, Cleveland	21	260	990,000
Railway Exchange, St. Louis	21	250	1,118,683
General Motors, Detroit	15	220	1,125,871

Considers Standards for Valves and Fittings

The sectional committee on the standardization of pipe flanges and fittings of the American Society of Mechanical Engineers has accepted the resolutions offered by the Manufacturers Standardization society of the valve and fittings industry. The latter, one of the sponsors of the standardization project, had requested consideration of dimensions which it had developed for steel base fittings and case and malleable iron pipe plugs. The proposals were referred to the appropriate subcommittee for review prior to being submitted to the sectional committee for approval.

Welded Joints Tested

Results and interpretations of a 2-years' series of tests on welded joints made by Prof. T. R. Lawson, department of civil engineering, Rensselaer Polytechnic institute Troy, N. Y., have been published and analyzed in the June issue of *General Electric Review*. The results demonstrate the definite place which electric arc welding is assuming in the structural steel industry.

Editorials

Speeds Up Standardization Procedure

APPROVAL of a plan whereby proposed new standards or proposed amendments of existing tentative standards may be reviewed between annual meetings by a new committee on standards and if found satisfactory may be published as A. S. T. M. tentative standards was the forward step taken by the American Society for Testing Materials at its annual meeting in Atlantic City last week. The committee itself will not formulate standards, but it will assist materially in developing standardization work to cover adequately the entire field of engineering materials and in maintaining contact with other bodies engaged in similar effort.

Heretofore there often has been a time lag of considerable proportions between final action by a standing committee and acceptance as tentative at the annual meeting—a delay that has seemed unnecessary and is likely to become a handicap in serving the standardization needs of industry. It is believed that this time interval can be reduced without jeopardizing the safeguards which society procedure has placed around the establishment of a standard. A tentative standard so promulgated between annual meetings is to be formally brought before the succeeding annual meeting, where it will be subject to amendment in the usual way and will normally be continued as tentative for another year.

The adoption of this procedure, without question, will encourage standing committees to complete sections of their work more rapidly. Industry in America wastes little time in delay, thus this effort of the American Society for Testing Materials to speed up standardization procedure is in harmony with modern progress and constitutes a desire to be of greater service.

Applying Mileage Scale the Test

UNTIL the railroads begin filing tariffs making effective the interstate commerce commission's decision in Docket No. 17,000, decreeing a mileage basis for freight rates on iron and steel products east of the Mississippi and north of the Ohio and Potomac rivers, the full import of this radical departure in ratemaking will not be known. It may well be that the railroads will receive an extension after Oct. 20, and a half year may pass before new rates take hold.

Whether the decision will prove really momentous to producers of finished products remains to be seen. Many of the seeming inequalities in the tentative short-haul rates may disappear when the railroads begin grouping points of origin, sanctioned to a reasonable degree by the commission. Already it is seen that to such an important consuming point as Detroit, the relationships between Pittsburgh, Youngstown, Cleveland and Chicago are little changed.

It is only natural that local interest colors appraisal of the commission's edict. New York is frightened by the lower rates from Pittsburgh to Philadelphia and Baltimore. Chicago visualizes the commission motivated by the principle of permitting the carriers to recoup on long hauls their losses on short ones, a procedure likely to benefit Pittsburgh. Cleveland expects maladjustments in rates to nearby points to be corrected. Pittsburgh's complacency, especially on long hauls, may substantiate Chicago's fears.

As a basis for computing freight rates a mileage scale is a radical departure. In theory it is just, provided the rate of progression is equitable. It is this reservation which causes doubts, especially on the part of Chicago. From the celerity with which iron and steel producers proposed mileage scales during the rate investigation, the basis is acceptable, and only the application is moot.

Steel Better Business Barometer

A RESULT of the prevailing method of buying steel is to make production figures more than ever an index of current general business. As a fundamental material entering largely into all other branches of industry it always has been an indicator of some degree. But in the more or less distant past buying was done largely for future consumption and to fill stocks. On that basis conclusions drawn from its sales might mislead.

In recent years the custom has been more and more to buy only for current needs and rely on prompt shipment and quick transportation to supply needs of consumers, who have been carrying almost nothing in stocks. Instead of a month's or a quarter's requirements in its warehouses modern industry lives from hand to mouth and often has only a day's or a week's supply.

As a result any slackening in demand for

manufactured articles is transmitted almost instantly to steel producers. Formerly the cushion of consumer stocks took up the shock and steelmakers were late in receiving their knowledge of lessening conversion of their product.

Such a situation saves the cost of capital frozen in large inventory and furnishes a close touch on the pulse of business which averts overproduction and loss. Steadiness of prices and prompt delivery by transportation interests have aided greatly in producing this condition of balance between the needs of consumers and production.

Group Activity Brings Business Gains

CO-OPERATION in American business methods finds striking proof of rapid growth in a recent compilation by the department of commerce. In 1912 the first compilation of commercial and industrial organizations showed 3200, of which 350 were national in scope. Now there are more than 13,000 organizations, of which 2000 are national, about the same number of statewide extent, and 9100 local ones.

Every branch of activity, whether industrial or otherwise, seems to have conceived the idea of the value of assembling its combined knowledge for the general good. As a result each group has gained in effective effort and the total result is seen in the social and business structure of the present. A quarter of a century ago business would have shrunk from such revelation to competitors of its trade methods.

Pooling of interests has resulted in the rapid advance that has been the wonder of the world and even now is not comprehended by observers from other lands. Examination of the listed organizations in the commerce department's publication indicate that size is not necessary to success. Some organizations contain only three members, or six or eight. Yet the small groups have advanced their own branch of industry by bettering their methods through common interest and co-operation.

In the steel industry great strides have been made in broadening the use of that metal in various directions through association activities. Brass and copper producers also have added to their field by common effort. While these two lines have been competitive, each has increased its use at no loss to the other, in the aggregate. The business world as a whole has had the benefit.

Metals Emerging Into Activity

AFTER one of the longest quiet spells that nonferrous metal markets have seen for several years, more active markets seem approaching. In the second quarter new buying was light, yet specifications and shipments against old orders continued active. Business was so good that many half year records were made.

Old orders have been well worked off. The result is that whereas metal producers had their largest order books three months ago, they now have about as small order books as in several years. This situation, with business at large continuing active, can only mean good buying.

Zinc smelters have some orders on their books that extend well through the year, but July and August commitments would account for less than average shipments by a good margin. Copper producers have a fair amount of domestic orders for July, taken mostly when the market was nearing its top, and only a small amount of export orders for July. Beyond July they have almost no orders.

The tin market lately has been more active, but for second quarter as a whole it was relatively quiet. Lead remained fairly active through the quarter because it did not have a great buying wave of futures like the other metals. And it looks as if more buying for July shipment lead and most of August still was to be done. Brass and copper mills still have large order books in most lines. New purchases of their products were small through most of the spring but picked up in June.

These facts, with the good business situation here and abroad, indicate more active buying of metals. Outputs appear to be liberal enough, however, to indicate that unusual strength is improbable.

July To Measure Scrap Supply

IN VIEW of the well sustained consumption of iron and steel scrap, which has attained unprecedented vigor this year, much uncertainty and difference of opinion has arisen in several of the western markets as to visible supplies for the immediate future.

Many buyers feel that seasonal offerings of the railroads and other producing sources will create an ample reservoir, typical of what has been regarded as normal for the summer season. Other consumers and many sellers do not share this view, although railroad offerings have been heavy and consumers' tracks in recent weeks have been glutted with heavy shipments.

The unusual volume of scrap being melted this season has tended to upset the ordinary calculations of relative supply and consumption. Much now hinges upon the fabricating activity of numerous metalworking lines in the next few weeks. Events of the next month may be expected to fashion with more certainty the measurement of the scrap reservoir.

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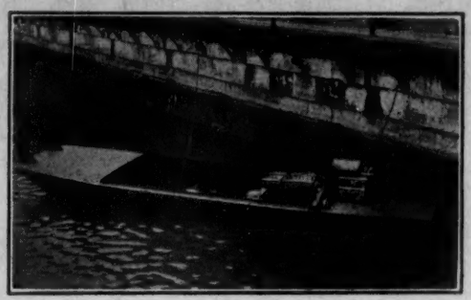

Medium size, heavy-duty power boats fabricated by welding. Page 20.

JAMES A. FARRELL'S comments on some modern merchandising methods, as delivered to flat-rolled steel executives, and reported on pages 6 and 7, are interesting. If we understand him correctly, absurd or extravagant claims as to exclusive superiority of product broadcast by some manufacturers are confusing the public, to the detriment of the whole industry, and engendering a harmful form of competition. Technical publications and not literary journals are the "logical media," in his opinion, for proof, rather than pretense.

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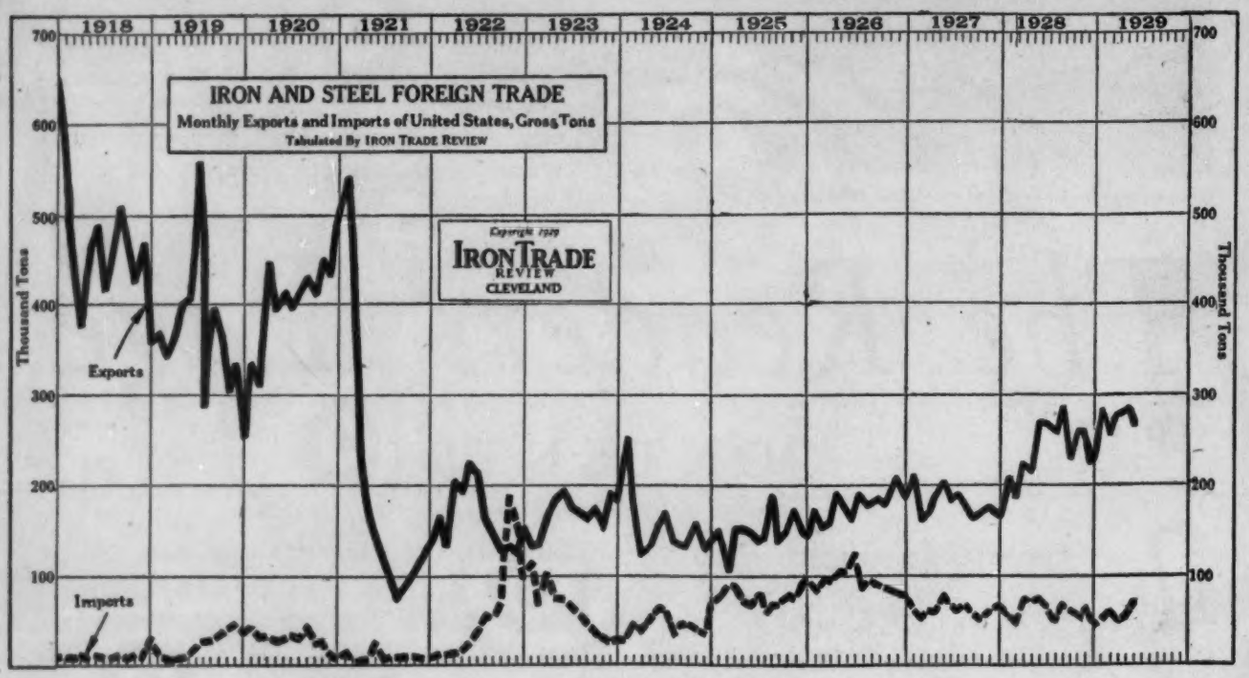
The Business Trend



Overcapacity Fades in Steel

By JOHN W. HILL, Financial Editor

EXPORTS of iron and steel products during the first five months of 1929 accounted for a larger proportion of the country's total production than was true for the corresponding period of 1928. Aggregate shipments to foreign markets were 1,344,028 tons, compared with 1,096,595 tons in 1928. Using ingot output as the measure, exports this year were 5.5 per cent of production against 5.2 per cent one year before.

THE increase in exports for the first five months was 22 per cent over one year ago, while the gain in ingot production was 14 per cent. Foreign markets are seen to have had a relatively rapid expansion during recent months. At the same time imports have declined. The total for the first five months amounted to 294,210 tons, compared with 327,486 tons one year ago, a decline of 10 per cent.

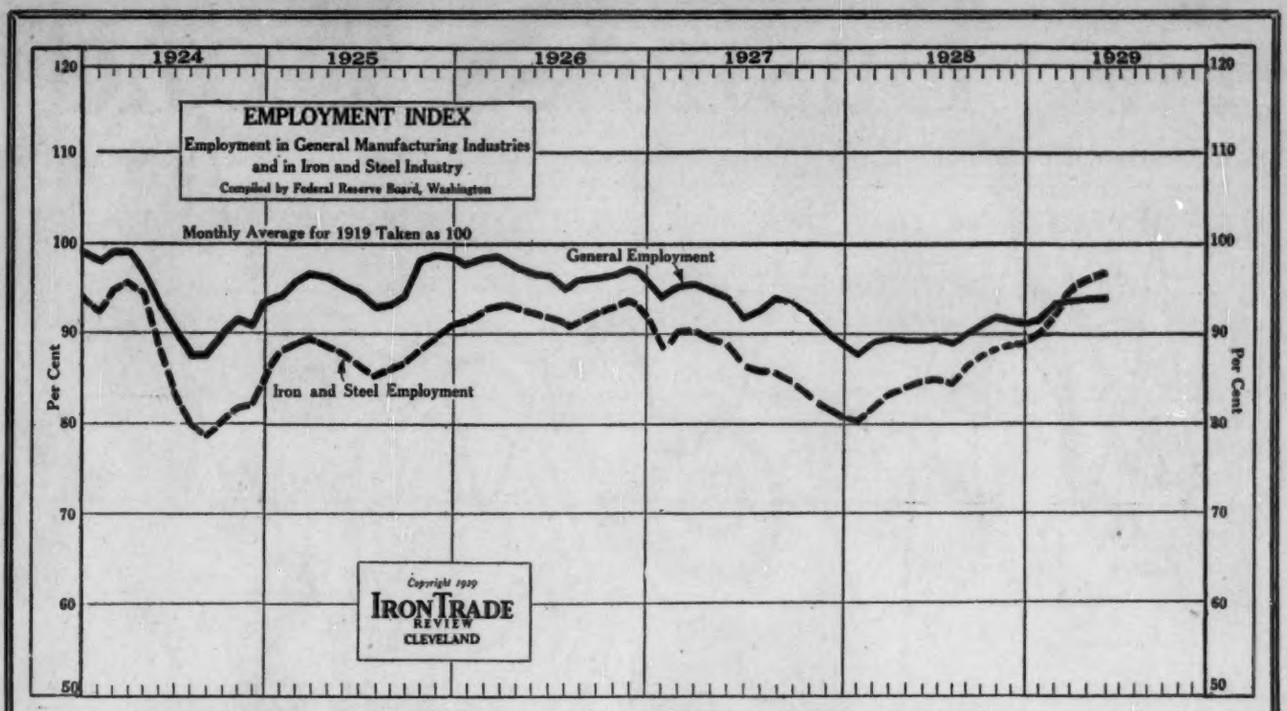
IN MAY, however, there was a change in the trend with exports falling and imports rising. Total exports for the month were 261,516 tons, a decrease of 16,064 tons from the April figure. Imports were 74,272 tons, an increase of 19,935 tons over April. Principal gains in May imports were for pig iron and pipe.

THE higher level of foreign demand for American iron and steel in 1929 was only one of the important sources of consumption showing gains over one year ago. The real stimulus to the iron and steel trade has come from greatly enlarged demand from the automobile and railroad equipment industries, with sustained heavy volume of buying from farm implement, structural, and miscellaneous lines.

PERHAPS the most important development of the first half of 1929 as it reflects upon the iron and steel industry has been the accumulation of evidence that the period of overproduction and excessive capacity has passed. With production in the industry virtually at capacity over a prolonged period steel prices are higher at midyear than they were at the start of the year.

ONLY a few years ago it was the fashion to think of the iron and steel industry as being burdened down with a crushing weight of overcapacity. Without a margin of producing facilities in the first half of 1929, chaotic market conditions would have prevailed. It is now clear that the industry has done no more than keep pace with the nation's requirements.

The Business Trend

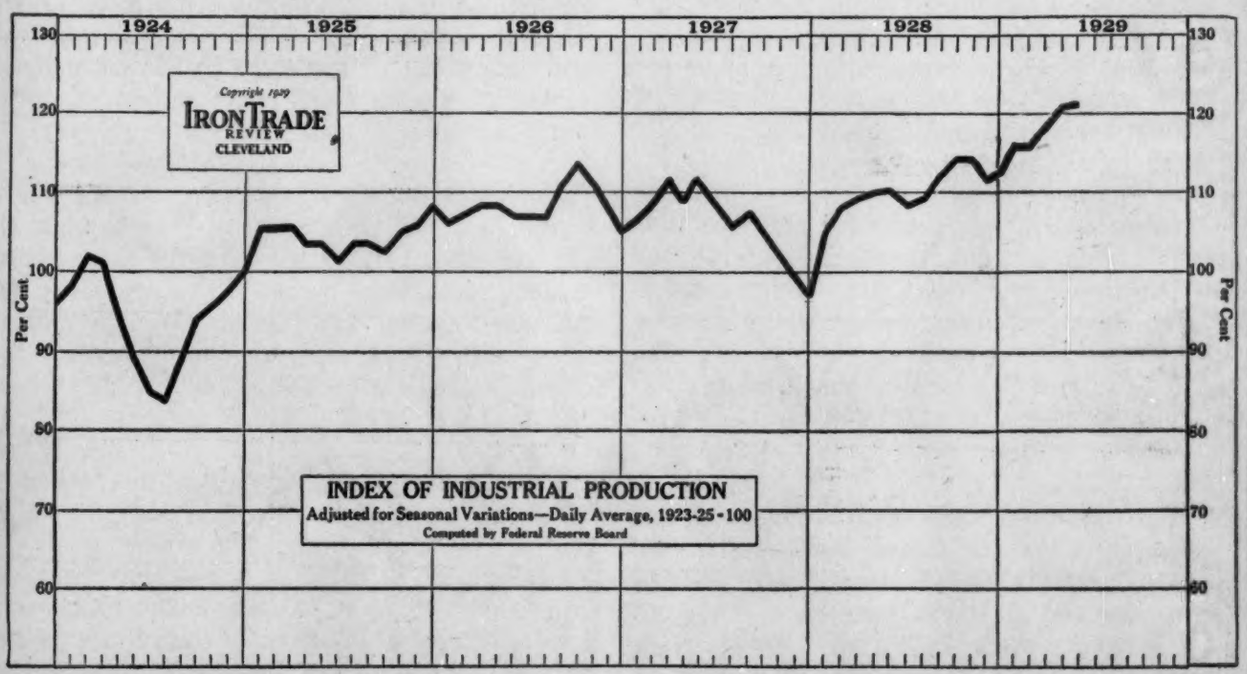


Employment Index

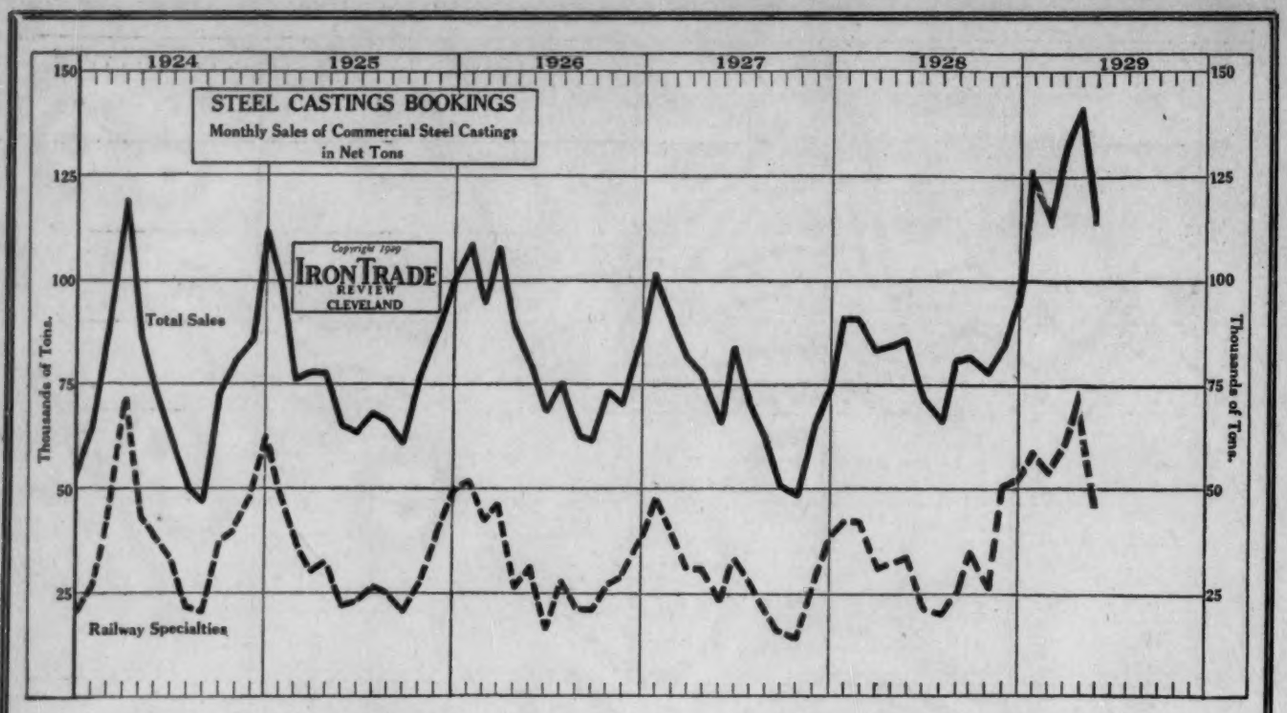
FURTHER gains have taken place in the volume of factory employment and payrolls. The index of employment, computed by the Federal Reserve board at Washington, shows increases for both general factory employment and for iron and steel mills. The level of payrolls this year is far above that of one year ago, the increase for general industries being nearly 7 per cent. There were notable gains in employment in May compared with one year ago for the machine tool industry.

Industrial Production

INDUSTRIAL production continued at a high rate in May, according to the compilation of the Federal Reserve board. Production of iron and steel increased further and shipments of iron ore during May were the largest for any month of any recent year. Production of pig iron, steel ingots and coke was at record levels, and semi-finished and finished steel were produced in large volume. Output of automobiles showed a slight reduction in May. Copper production was lower for the month.



The Business Trend

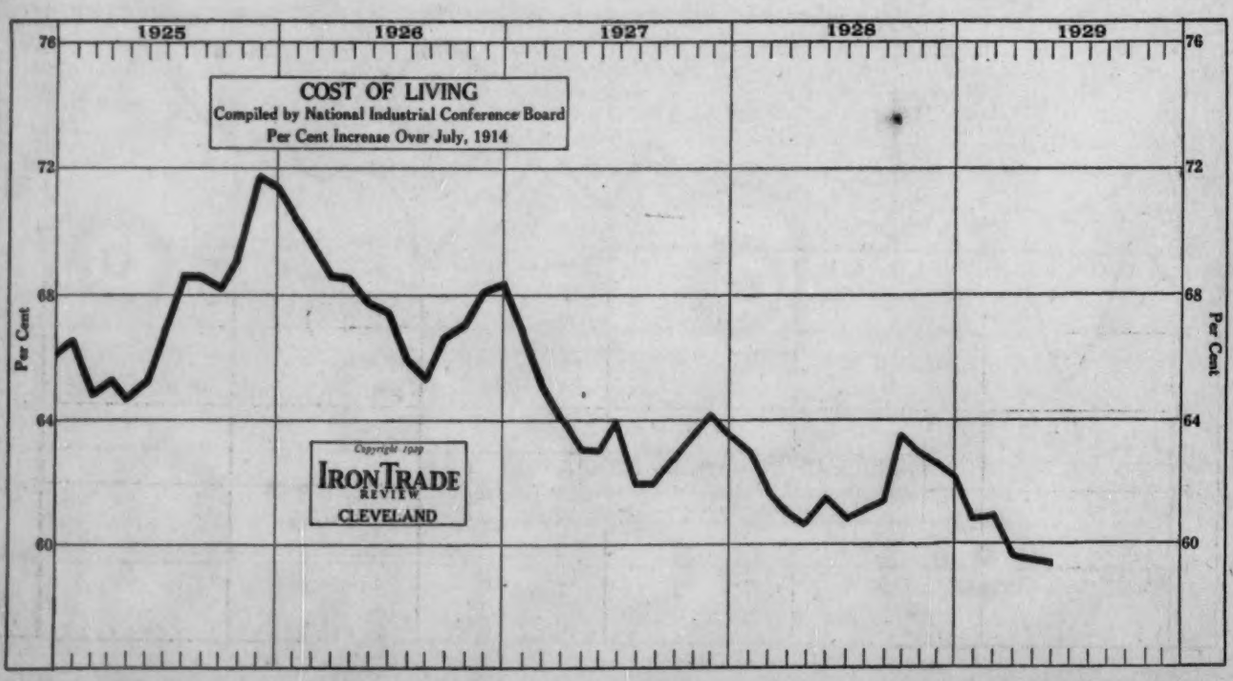


Steel Castings

NEW orders for steel castings in May as reported to the department of commerce by leading manufacturers amounted to 113,219 tons, compared with 144,616 tons in April and 86,796 tons in May, 1928. Bookings during the month were 78 per cent of capacity, against 59 per cent one year ago. Railway specialty orders declined to 45,000 tons for May, compared with 75,625 tons in April and 34,995 tons in May, 1928. Total bookings for castings to the end of May were 628,623 tons.

Cost of Living

THE cost of living continues to show a small decline. The index as compiled by the National Industrial Conference board for May stands at 59.4 per cent over the index of July, 1914, compared with 59.8 per cent over 1914 one month ago. One year ago the index was 62 per cent over 1914. Food prices show the smallest increase over 1914, the gain being 53 per cent. Rents are 59 per cent up and clothing is up 67 per cent. Fuel and light prices are 56 per cent higher than they were just before the war.



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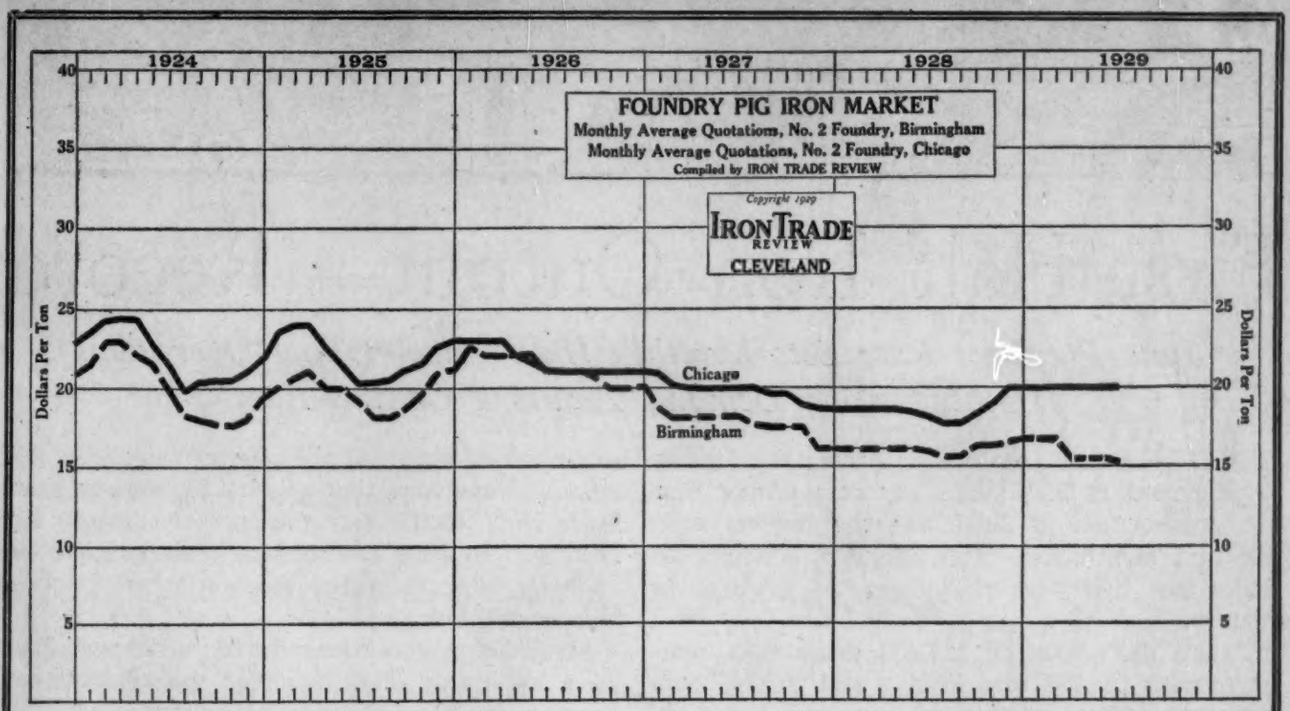
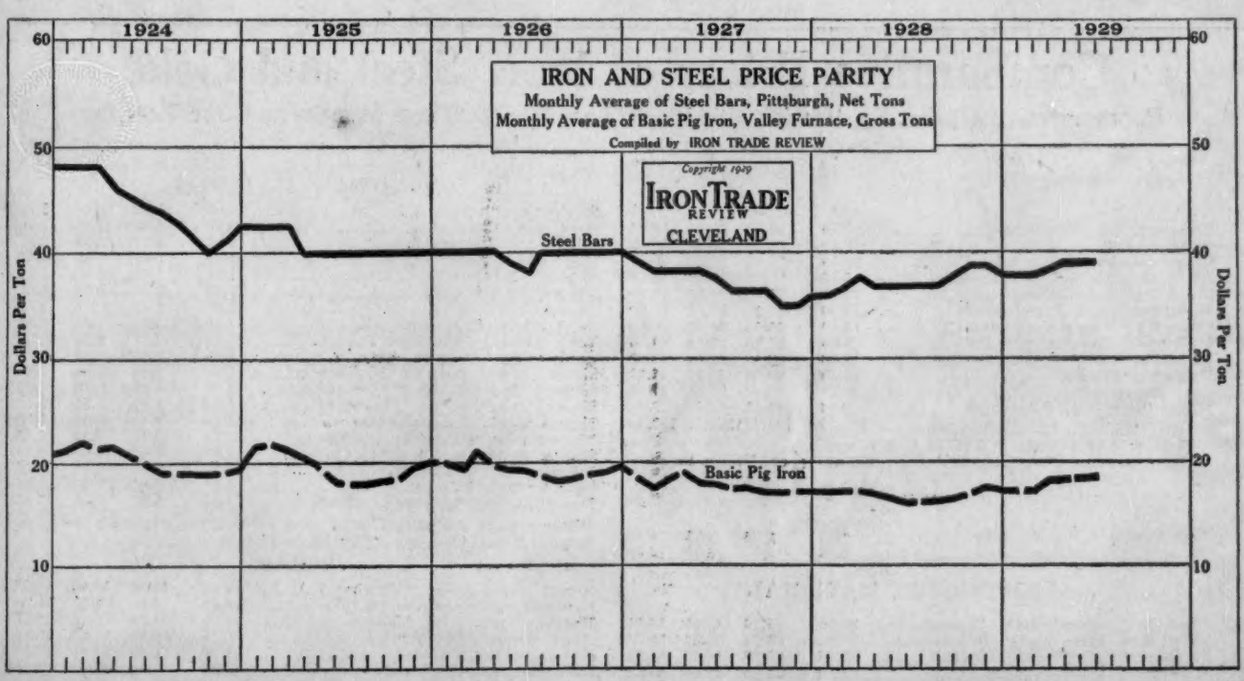


Foundry Pig Iron

THE foundry pig iron market continues firm in the North but still is revealing weakening symptoms in the South. Chicago No. 2 foundry iron averaged $20 a ton during June, unchanged from the May figure. Chicago iron has held steady at $20 since its recovery late in 1928. Birmingham No. 2 foundry iron also made some recovery late in 1928 but this gain has not been held. The market stood at $15.50 in May and during June the price declined to $15 a ton in the South.

Steel Price Parity

ALTHOUGH there has been some weakness in semifinished steel prices the market for finished steel continues to hold. Steel bars at Pittsburgh remained at $39 a ton during June, unchanged from May. This is $1 a ton higher than at the beginning of the year and $2 a ton higher than one year ago. Basic valley pig iron has held at the $18.50 per ton level during June, having reached that figure about the middle of May. The quotation compares with $17.50 a ton for January and with $15.80 one year ago.



First Half Iron Output a Record

June Pig Iron Rate Sets Monthly High—Steelmaking Operations Holding, with Demand Assuring Continuation

DESPITE a slight recession from the alltime record of May, the daily rate of pig iron production in June was the highest ever for that month, and total output was ample to make first half year production the greatest in history.

June's daily rate of 123,853 gross tons compares with 125,753 tons in May and 102,745 tons last June. The best previous June rate was 122,262 tons, in 1923. Only May, 1929, and May, 1923, had a higher daily average.

June Rate Third Best In History

The June total of 3,715,583 tons was only 4½ per cent below the May total, which was a record, in the face of one less working day. In June, 1928, only 3,082,340 tons were made. For the first six months pig iron output totaled 21,638,016 tons, exceeding the previous first half record—20,828,401 tons, in 1923—by 4 per cent. In the first half of 1928 output was 18,510,463 tons.

The gain in the number of stacks active, which set in last December and has been uninterrupted, continued in June. At the close of the month 220 stacks, or one more than on May 31, were in blast. Since Nov. 30 the net gain in active stacks has been 26. In June two merchant stacks blew out and two blew in; three steelworks stacks went in and two out.

Steelmaking operations having concluded June on a basis only slightly under the alltime peak reached in May, final statistics for steel, like those for pig iron, undoubtedly will reveal a record June and a record first half year. Indicative of the pressure for steel, the July 4 holiday will be a one-day interlude for most mills. Chicago operations continue at 95 to 98 per cent, and Pittsburgh at 95. Valley production is down about one point.

"Midsummer Recession" a Misnomer

It still is true that, considering all makers and all products, specifications for steel are giving some ground, but the retreat from the first half gait is so moderate that some large producers have dropped "midsummer recession" from their

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	July 3, 1929	June 1929	April 1929	July 1928
PIG IRON				
Bessemer, del. Pittsburgh	$20.76	20.76	20.26	18.76
Basic, valley	18.50	18.50	18.00	15.95
Basic, eastern, del. eastern Pa.	20.25	20.25	20.25	19.00
No. 2 foundry, del. Pittsburgh	19.76	19.76	19.86	18.26
No. 2 foundry, Chicago	20.00	20.00	20.00	17.60
*Southern No. 2, Birmingham	15.00	15.25	15.50	15.50
**No. 2X, Virginia furnace	20.00	20.00	20.75	20.50
**No. 2X, Eastern del. Phila.	22.76	22.76	22.26	20.76
Malleable, valley	19.00	19.00	18.50	17.00
Malleable, Chicago	20.00	20.00	20.00	17.60
Lake Superior charcoal, del. Chicago	27.04	27.04	27.04	27.04
†Gray forge, del. Pittsburgh	19.13	19.13	19.26	18.76
Ferromanganese, del. Pittsburgh	109.79	109.79	109.79	109.79

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.
†Now based on Pitts. dist. fur. price; formerly on Valley base.

COKE				
Connellsville furnace, ovens	2.75	2.75	2.75	2.60
Connellsville, foundry, ovens	3.75	3.75	3.75	3.50
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngstown	35.00	35.75	35.00	33.00
Sheet bars, open-hearth, Pittsburgh	35.00	35.75	35.25	32.25
Billets, open-hearth, Pittsburgh	35.00	35.75	34.50	32.25
Wire rods, Pittsburgh	42.00	42.00	42.00	42.00

	July 3, 1929	June 1929	April 1929	July 1928
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.95	1.95	1.95	1.85
Steel bars, Chicago	2.05	2.05	2.05	2.00
Steel bars, Philadelphia	2.27	2.27	2.27	2.17
Iron bars, Chicago	2.05	2.05	2.05	2.00
Shapes, Pittsburgh	1.95	1.95	1.95	1.85
Shapes, Philadelphia	2.00	2.06	2.06	2.01
Shapes, Chicago	2.05	2.05	2.05	2.00
Tank plates, Pittsburgh	1.95	1.95	1.95	1.85
Tank plates, Philadelphia	2.15	2.15	2.15	2.10
Tank plates, Chicago	2.05	2.05	2.05	2.00
Sheets, black, No. 24, Pittsburgh	2.85	2.95	2.90	2.65
*Sheets, blue anl., No. 18, Pittsburgh	2.35	2.35	2.15	2.00
Sheets, gal., No. 24, Pittsburgh	3.60	3.65	3.65	3.50
Sheets, black, No. 24, Chicago	3.10	3.10	3.10	2.80
*Sheets, blue anl., No. 18, Chicago	2.50	2.50	2.35	2.15
Sheets, galvanized, No. 24, Chicago	3.85	3.85	3.85	3.65
**Plain wire, Pittsburgh	2.50	2.50	2.50	2.45
**Wire nails, Pittsburgh	2.65	2.65	2.65	2.55
Tin plate, per base box, Pittsburgh	5.35	5.35	5.35	5.25

*Comparisons for April, 1929, and July, 1928, are with old blue annealed base, No. 10. **To large jobbers.

SCRAP				
Heavy melting steel, Pittsburgh	18.25	18.30	18.60	14.10
Heavy melting steel, eastern Pa.	16.50	16.25	17.00	12.75
Heavy melting steel, Chicago	14.75	14.95	15.95	12.30
No. 1 wrought, eastern Pa.	16.25	16.25	16.25	15.25
No. 1 wrought, Chicago	14.85	15.40	16 65	12.30
Rails for rolling, Chicago	17.50	17.50	17.50	14.50

Current Prices for Rolled Steel Products

PRICES IN CENTS PER POUND

STEEL PLATES

Pittsburgh, base	1.95c
Philadelphia, del.	2.15c to 2.25c
New York, del.	2.225c to 2.325c
Boston, del.	2.265c to 2.415c
Chicago, base	2.05c to 2.15c
Cleveland, delivered	2.14c
Lackawanna, N. Y., base	2.05c to 2.15c
Birmingham, base	2.10c to 2.20c
Coatesville, Pa., base	2.00c to 2.10c
Pacific Coast, c.i.f.	2.35c
St. Louis, del.	2.27c
Detroit, del.	2.19c to 2.24c

STRUCTURAL SHAPES

Pittsburgh, base	1.90c to 1.95c
Philadelphia, base	1.96c to 2.11c
New York, del.	2.195c to 2.245c
Boston, del.	2.265c to 2.415c
Chicago, base	2.05c to 2.15c
Cleveland, delivered	2.09c to 2.14c
Lackawanna, N. Y.	2.05c to 2.15c
Birmingham, base	2.10c to 2.20c
Bethlehem, Pa., base	2.00c to 2.10c
Pacific Coast, c.i.f.	2.35c
Detroit, del.	2.19c to 2.24c

BARS

SOFT STEEL

Pittsburgh, base	1.95c
Chicago, base	2.05c to 2.15c
Birmingham, base	2.10c to 2.20c
Lackawanna, N. Y., base	2.05c to 2.15c
Pacific Coast, c.i.f.	2.35c
Cleveland, base, local mills	1.90c to 1.95c
Cleveland, del., outside mills	1.95c to 2.00c
Philadelphia, del.	2.27c to 2.32c
New York, delivered	2.29c to 2.34c
Boston, delivered	2.265c to 2.415c
Detroit, del.	2.19c to 2.24c
Pittsburgh, cold finishing	2.05c
Pittsburgh, forging quality	2.15c

RAIL STEEL

Chicago Heights	1.95c
Eastern mills	1.85c to 1.95c

IRON

Chicago, base	2.05c to 2.15c
New York, delivered	2.19c to 2.24c
Philadelphia, delivered	2.17c to 2.22c
Pittsburgh, refined	2.75c to 4.25c

REINFORCING

Pittsburgh, billet, cut lengths	2.30c
Stock lengths from mill	2.00c
Chicago, billet	2.40c to 2.90c
Chicago, rail steel	1.95c to 2.05c
Chicago, rail steel, road and bridge work	1.95c to 2.05c
Philadelphia, cut lengths	2.57c to 2.62c

SHEETS

SHEET MILL BLACK, NO. 24

Pittsburgh, base	2.85c to 2.95c
Philadelphia, delivered	3.17c to 3.27c
Gary, Indiana Harbor	3.05c
Chicago, delivered	3.10c
Birmingham, base	3.10c
St. Louis, del.	3.27c

TIN MILL BLACK, NO. 28

Pittsburgh, base	3.00c
Gary, base	3.10c

GALVANIZED, NO. 24

Pittsburgh, base	3.60c to 3.70c
Philadelphia, delivered	3.92c to 4.02c
Gary, Indiana Harbor	3.80c
Chicago, delivered	3.85c
Birmingham, base	3.85c
St. Louis, del.	4.02c

BLUE ANNEALED

Sheets, No. 13

Pittsburgh, base	2.35c
Chicago district mills	2.45c
Chicago, delivered	2.50c
St. Louis, delivered	2.67c
Philadelphia, delivered	2.67c
Birmingham	2.50c

Plates, No. 9 and 10

Pittsburgh, base	2.10c to 2.20c
Chicago district mills	2.30c
Chicago, delivered	2.35c
Philadelphia, delivered	2.52c
St. Louis, delivered	2.52c
Birmingham	2.35c

AUTOMOBILE, NO. 20

Pittsburgh, base	4.10c
Detroit, delivered	4.39c

FURNITURE

Pittsburgh	4.20c

(Turn to the following page)

vocabularies. Structural requirements have diminished, but sheet, plate, bar and pipe needs bulk so large they promise unusual mill activity well into the autumn.

Railroad buying, both of equipment and track material, is surprisingly well sustained in view of primary rail purchases, equalling last year, and the distribution of over 60,000 freight cars in the first half year, compared with 45,000 in all 1928. Rail buying the past week includes 39,000 tons by the Norfolk & Western and 6000 by the Chicago & Eastern Illinois, with the Rock Island and Milwaukee lines to place 15,000 tons. Three thousand tons of fastenings was bought at Chicago, where 6000 tons is pending, exclusive of the Norfolk & Western inquiry.

13,000 Tons of Steel for Cruisers

Two cruisers contracted for by the navy department require 6500 tons each, mostly plates. At Chicago nearly 10,000 tons of plates was placed last week for western oil tanks, with 13,000 tons still on inquiry. In the first half 30,000 tons of plates was bought at Pittsburgh for barges. One maker's specifications for bars at Pittsburgh last week was the best in nearly a year. Chicago sales of bars have been running 20 per cent ahead of last year. Sheet mills are in a period where the handicap of hot weather usually dovetails with receding business, but this July it is the delivery situation that troubles. Shrinkage in automotive demand for the high finishes is less apparent. Blue annealed deliveries at Pittsburgh are deferred as much as seven weeks. Galvanized sheet prices are soft in most districts. Tin plate production is down as the pressure for deliveries is lightened.

Big Southern Pipe Line Placed

Strip mills more than other finishing departments have felt a letdown in automotive requirements, and on some hot-rolled sizes shipments can now be made in two weeks. Excepting nails, wire products production in the first half was a peacetime record. Lapweld pipe mills now expect to go through the summer on substantially the current rate, in excess of 80 per cent with some go through the summer at substantially the cur- for a Texas line was placed with a Milwaukee mill, this and another mill sharing 100,000 tons in another southern line.

Continued high steelmaking rates react favorably upon the merchant pig iron situation, excepting in southern iron; a surplus resulting in asking prices in the North figuring below $15, base, Birmingham. With the closing of third quarter contracts by several important consumers this week, most needs have been covered. Shipments are receding slightly. Large order books and low stocks, both of furnaces and melters, are stabilizing prices. Scrap prices are holding.

Application of a price lower than the open market to tonnage buyers of black sheets has lowered the IRON TRADE REVIEW composite of 14 leading iron and steel products 8 cents to $36.76. This is the third consecutive drop.

Composite Market Average

Based on Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

This week (July 3, 1929)	$36.76
Last week (June 26, 1929)	36.84
One month ago (June, 1929)	36.99
Three months ago (April, 1929)	36.81
One year ago (July, 1928)	34.91
Ten years ago (July, 1919)	47.86
Fifteen years ago (July, 1914)	22.17

Current Rolled Steel Prices

PRICES IN CENTS PER POUND UNLESS OTHERWISE INDICATED

Tubular Products Quoted On Last Editorial Page—See Preceding Page For Other Products

HOOPS, BANDS, STRIPS

Hot strip, to 6-in., Pitts.	2.00c
Hot strip 6 in. to 24-in., Pitts.	1.90c
Hot strip, bands 6 in. and under, Chicago	2.10c to 2.30c
Do. 6 in. to 24 in.	2.00c to 2.10c
Cooperage stock, Pittsburgh	2.20c
Do, Chicago	2.30c
Cold rolled strip, hard coils, 16 inches and under by 0.100-inch and heavier, base Pitts., Cleve. (3 ton and over)	2.75c to 2.85c
Worcester, Mass. (3 tons and over)	2.90c to 3.00c

ALLOY STEEL

Hot Rolled
F.o.b. Mills
Alloy Quality Bar Base is 2.65c

S.A.E. Series Number	Alloy differential	Net 100 lb. bars
2000	0.25	$2.90
2100	0.55	3.20
2300	1.50	4.15
2500	2.25	4.90
3100	0.55	3.20
3200	1.35	4.00
3300	3.80	6.45
3400	3.20	5.85
4100 0.15-0.25 Mo.	0.50	3.15
4100 0.25-0.40 Mo.	0.70	3.35
4600 0.20-0.30 Mo. 1.25-1.75 Ni.	1.05	3.70
5100 0.60-0.90 Cr.	0.35	3.00
5100 0.80-1.10 Cr.	0.45	3.10
5100 Chrome Spring	0.20	2.85
6100 Bars	1.20	3.85
6100 Spring Steel	0.95	3.60
Chrome Nickel Vanadium	1.50	4.15
Carbon Vanadium	0.95	3.60
9250 (flats)	0.25	2.90
9250 (rounds squares)	0.50	3.15

Hot rolled alloy billets 4 x 4-inch and over take same price per gross ton as same specification alloys bars per net ton. Sizes under 4 x 4 to 2½ x 2½ in. inclusive sold on bar basis plus steel bar card extras for size. Sizes under 2½ in. x 2½ in. take bar price on net ton basis.

COLD FINISHED STEEL

Cold finished steel bars drawn or rolled, Pitts., Chi., c.l.	2.30c
Do, del. Detroit	2.575c
Shafting (turned, polished) Pittsburgh	2.30c
Shafting (turned, ground) mill (Depending on size, 1 3/16 to 7-inch)	2.65c to 3.10c
Cold finished steel bars, Cleve.	2.25c to 2.35c

WIRE PRODUCTS

F.o.b. Pittsburgh, Cleveland, Ironton base (Per Pound)	Dealer trade	Large jobbers
Bright plain wire, 6 to 9 gage	2.60c	2.50c
Annealed field wire	2.75c	2.65c
Galvanized wire	3.20c	3.10c
Barbed wire, galvanized	3.40c	3.30c
(Per 100-pound keg)		
Wire nails	$2.75	$2.65
Galvanized nails	4.75	4.65
Polished staples	3.20	3.10
Galvanized staples	3.45	3.35
Cement coated nails	2.75	2.65
Manuf. wire, del. Detroit		
Wire nails, del. Detroit	$2.785 to $2.885	

Joliet, DeKalb and Waukegan, Ill., Anderson, Ind., and Chicago prices $1 per ton over Pittsburgh-Cleveland-Ironton base or products made there; Duluth $2 higher; Worcester, Mass., Fairfield, Ala., $3 higher.

Woven wire fencing, retailers, Pittsburgh-Cleveland, net ton $65.

Anderson, Ind., $1 higher. Chicago $2 higher, Duluth, Birmingham $3 higher.

CUT NAILS, CHAIN PILING

Cut nails, c.l., f.o.b. mills	2.70c to 2.75c
Cut nails, l.c.l. f.o.b. mills	2.80c to 2.85c
Chain, 1-in., proof coil, Pitts.	6.00c
Sheet piling, base, Pittsburgh	2.25c

CAST IRON WATER PIPE

Prices per net ton
Class B pipe

Six-inch and over, Birming'm	$37.00 to 38.00
Four-inch, Birmingham	41.00 to 42.00
Four-inch, Chicago	49.20 to 50.20
Six-inch to 24-inch, Chicago	45.20 to 46.20
Six-inch and over, New York	38.00 to 40.00
Four-inch, New York	41.00 to 42.00
Standard fittings, Bir. base	$100.00

Six to 24-inch, base; over 24-inch. plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $4 higher than Class B.

TIN AND TERNE PLATE

Prices per 100-pound box Pittsburgh

*Tin plate, coke base	$5.35

Gary, Ind., base 10 cents higher.

Long ternes, primes, No. 24 4.00c to 4.10c

*Price subject to quantity differentials.

WASHERS

Wrought, c.l., Pitts. dist.	$6.50 to 6.75 off
Wrought, c.l., Chicago dist.	$6.70 to 6.90 off
Lock: to dealers	85-5 off
Lock: to consumers	85 off

RAILS, TRACK MATERIAL

Standard bessemer rails, mill	$43.00
Standard open-h'th rails, mill	$43.00
Relay rails, Pitts., 60 to 90 lb.	$24.00 to 29.00
Light rails, 25 to 45, mill	$36.00
Angle bars, Chicago base	2.75c
Spikes, railroad, Pittsburgh	2.80c
Spikes, small railroad, 7/16-inch and smaller, Pitts.	2.80c
Spikes, boat and barge, Pitts.	3.00c
Spikes, railroad, Chicago	2.80c
Track bolts, Pitts., steam roads	3.80c
Track bolts, Pitts., stand. jobbers	70 off list
Track bolts, Chicago	3.80c
Tie plates, Chicago, Pitts.	$43.00

BOLTS AND NUTS

Birmingham and Chicago

Discounts are for legitimate jobbing or large consuming trade purchasing in full-case lots, apply to lists of April 1, 1927.

Small lots are 55 to 60 per cent off.

CARRIAGE BOLTS

All sizes, cut thread	60 to 70 off
Rolled thread ⅝ x 6 and smaller take 10 per cent lower list.	
Eagle list	60 to 70 off

MACHINE BOLTS

All sizes, cut thread	60 to 70 off
Rolled thread ⅝ x 6 and smaller take 10 per cent lower list.	
Lag screws	60 to 70 off
Plow bolts, Nos. 1-2-3-7 heads	60 to 70 off
Tap bolts	60 to 70 off
Blank bolts	60 to 70 off
Stud bolts without nuts	60 to 70 off
Stove bolts, 75, 20, 10 and 5 off in pkgs., 75, 20, 10 and 5 with 2½ off in bulk.	
Tire bolts	60-5 off

Nuts

Semifinished	60 to 70 off

HEXAGON CAP SCREWS

Milled	80-10-5 off
Upset 1 in. diam. and smaller	5 off

SQUARE HEAD SET SCREWS

Milled	80-5 off
Upset 1 in. diam. and smaller	80-10-5 off

RIVETS

Struc., c.l., Pitts-Cleve.	3.10c
Structural, c.l. Chicago	3.20c
**7/16-inch and smaller, Pitts.	70 and 10 off
Chi., Cleve.	70 to 70 and 10 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

Raw Materials and Semifinished Products

SEMIFINISHED MATERIAL

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$35.00
Pittsburgh, bessemer	35.00
Youngstown	35.00
Cleveland	35.00
Philadelphia	39.30 to 41.30
Chicago	37.00
Forging, Chicago	42.00
Forging, Pittsburgh	40.00 to 41.00
Forging, Philadelph'a	44.30 to 46.30

SHEET BARS

Pittsburgh	$35.00
Youngstown	35.00
Cleveland	35.00
Chicago	37.00

SLABS

Pitts., Young.	$34.00 to 35.00
Cleveland	35.00

WIRE RODS

Pittsburgh, Cleveland	$42.00
Chicago	43.00

SKELP

All grades, Pittsburgh	1.90c to 1.95c

IRON ORE

LAKE SUPERIOR ORE

Per Gross Ton, Lower Lake Ports

Old range bessemer, 51½%	$4.80
Mesabi bessemer, 51½%	4.65
Old range nonbessemer, 51½%	4.65
Mesabi nonbessemer, 51½%	4.50
High phosphorus, 51½%	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%	8.00
Copper free low phosphorus 58 to 65 per cent	nominal

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-8% manganese	11.00 to 11.50
North African low phosphorus	12.00 to 12.50
Swed'sh foundry or basic, 65%, nominal at	9.00 to 10.00
Spanish and North African basic, 50 to 60 per cent	11.50 to 12.00
Newfoundland foundry, 55%	nominal
Tungsten spot and early fut., short ton unit, duty paid	15.50

MANGANESE ORE

Prices do not include duty of 1 cent per pound of metallic manganese contained.

Brazilian	34 to 36 cents
Indian	34 to 36 cents
Caucasian, (53-55 per cent)	36 cents

FLUORSPAR

85 and 5 per cent grade

Washed gravel, Kentucky and Illinois mines, per net ton	$18.00
Washed gravel, import duty paid cast. tide., gross ton	$20.15

REFRACTORIES

FIRE CLAY BRICK

Per 1000 f.o.b. works

First Quality

Pennsylvania	$43.00 to 46.00
Ohio	43.00 to 46.00
Illinois	43.00 to 46.00
Kentucky	43.00 to 46.00
Missouri	43.00 to 46.00
Maryland	43.00 to 46.00
Georgia and Alabama	40.00 to 45.00

Second Quality

Pennsylvania	35.00 to 38.00
Ohio	35.00 to 38.00
Illinois	35.00 to 38.00
Kentucky	35.00 to 38.00
Missouri	35.00 to 38.00
Maryland	35.00 to 38.00
Georgia and Alabama	30.00 to 35.00

SILICA BRICK

Pennsylvania	43.00
Joliet, Ill., East Chicago, Ind.	52.00
Birmingham	50.00 to 51.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2½	65.00

MAGNESITE

Net Ton Chester, Pa., and Baltimore base

Dead-burned grain magnesite	40.00

CHROME BRICK

Net ton Chester, Pa., and Baltimore base

9 x 4½ x 2½	45.00

Pig Iron

Market Continues Fairly Active, with Shipments Showing Moderate Decline—Backlogs and Low Stocks Strengthen Furnaces

THE situation of pig iron producers is unusually good for this time of the year. June shipments were slightly below the rate of May and the movement is declining gradually, though large orders on furnace books and low stocks in the hands of makers and melters give stability to prices. Cleveland furnace interests booked 36,000 tons during the week; more than 12,000 tons was closed in the New York district. Sales at Chicago have tapered off, the majority of users having covered for third quarter. The eighth cargo of eastern lake iron has been unloaded in the Chicago-Milwaukee district, bringing the total for the season to nearly 25,000 tons. General Electric Co. has closed for 6000 tons for various plants. An Ohio melter has placed 4000 tons for last half.

PITTSBURGH, July 2.—Several large melters remain to close for third quarter pig iron requirements, but considerable tonnage has been placed quietly for that period, and producers have a fair tonnage on books. Shipments in June showed some decline from May, although seasonally heavy. The fact stocks at furnaces and consumers' plants are low gives a good tone to the market. The trend of steelmaking is expected to have considerable influence on offerings during the next three months. The Westinghouse Electric & Mfg. Co. closed on its inquiry for Cleveland, but the Trafford City inquiry still is open. The tonnage for the latter may represent its requirements for the remainder of the year. Some radiator and sanitary ware interests are expected to be slow in entering the market due to the carry over of iron from second quarter. Prices still fail to disclose concessions from the levels of $18.50, valley, for No. 2 foundry and basic, and $19 for bessemer and malleable, with Pittsburgh district furnace quotations 50 cents higher.

Bessemer and basic iron price averages as compiled by W. P. Snyder & Co. for June were unchanged from the May figures of $19 and $18.50, respectively.

Boston, July 2.—Pig iron prices appear firmer. There have been no sales of Buffalo iron at less than $18.50, base, furnace. Reports that $18 has been done are not substantiated. New York iron generally is holding up to $18.50, Buffalo base, and the Mystic Iron Works is getting $20 or more, with $20.50 the general price. A considerable tonnage of malleable iron was sold in New England in the past week by New York furnaces. Sales of all grades totaled 6000 tons of which the Mystic company booked more than 2000 tons. General Fire Extinguisher Co. has not closed on 2000 tons, nor has General Electric Co. done anything on requirements for Everett and Lynn plants. About 2000 tons is wanted by a central Massachusetts foundry.

New York, July 2.—Pig iron appears slightly firmer, with 10,000 to 12,000 tons sold here during the past week, not including at least two sizable lots quietly placed. Approximately 6000 tons has been placed by General Electric Co. for various plants. Inquiries include 2000 to 2500 tons of foundry and 500 tons of malleable for General Fire Extinguisher Co., Providence, R. I., and 2000 tons of foundry iron for another New England consumer. While foundry continues $17.50 to $18, base, Buffalo, for this territory, $18 appears the more representative,

Pig Iron Prices

Per Gross Ton

Bessemer, valley furnace	$19.00
Bessemer, del. Pittsburgh	20.76
Basic, valley furnace	18.50
Basic, Pitts. dist. fur.	19.00
*Basic, del. Pittsburgh	19.63 to 20.13
Basic, Buffalo furnace	18.50
Basic, del. eastern Pa.	20.25 to 20.65
Malleable, valley furnace	19.00
Malleable, Pitts. dist. fur.	19.50
*Malleable, del. Pittsburgh	20.13 to 20.63
Malleable, Cleve. fur. for local del.	19.00
Malleabe, Chicago furnace	20.00
Malleable, Buffalo furnace	20.00
Malleable, del. eastern Pa.	22.76 to 23.26
Malleable, Granite City fur.	20.50
No. 1 foundry, Chicago furnace	20.50
No. 1X, Eastern del., Phila.	23.26
No.1X, Buffalo furnace	21.00
No. 2 foundry, valley furnace	18.50
No. 2 fdy., Pitts, dist. fur.	19.00
*No. 2 foundry, del. Pittsburgh	19.63 to 20.13
No. 2 plain, Buffalo furnace	19.50
No. 2 foundry, Chicago furnace	20.00
No. 2 fdy. Cleve. fur. for local del.	19.00
No. 2 plain, del., Phila.	22.26
No. 2 plain, Virginia furnace	19.50
No. 2 plain, Buffalo, del. Boston	22.41 to 22.91
No. 2 plain, N. J., tidewater	20.78 to 21.28
No. 2 Alabama, Bir. base	15.00
No. 2 Tenn., Birmingham base	15.00
No. 2 Tenn., del. Cincinnati	18.69
No. 2 Alabama, del. Cincinnati	18.69
No. 2 Alabama, del., Cleveland	21.01
No. 2 Alabama, del., Chicago	20.01 to 21.01
No. 2 Alabama, del. St. Louis	19.42
No. 2X, east. N. J., tidewater	21.28 to 21.78
No. 2X, eastern, del. Phila.	22.76
No. 2X, foundry, Buffalo furnace	20.00
No. 2X, Buffalo, del. Boston	22.91 to 23.41
No. 2X, Virginia furnace	20.00
Gray forge, Pitts. dist. fur.	18.50
*Gray forge, del. Pittsburgh	19.13 to 19.63
Low phos., standard, valley	27.00
Low phos., standard, Phila.	24.26 to 24.76
Low phos., copper bearing fur.	23.00 to 23.50
Charcoal, Superior, del., Chicago	27.04

*Freight from Pittsburgh district furnace to points in Pittsburgh district 63c, 76c and $1.13 per ton.

CANADIAN PRICES

No. 1 foundry, del. Toronto	$24.60
No. 1, foundry, del. Montreal	26.00
No. 2 foundry, del. Toronto	24.10
No. 2 foundry, del. Montreal	25.50
Malleable, del. Toronto	24.10
Malleable, del. Montreal	25.50
Basic, del. Montreal	24.50
Basic, del. Toronto	24.10

Silvery iron, Jackson county, O., furnaces, in per cents: 5—$23 to $24; 7—$25 to $26; 8—$26 to $27; 9—$27 to $28; 10—$29 to $30; 11—$31 to $32; 12—$33 to $34; 13—$35 to $36.

Bessemer ferrosilicon, Jackson county, O., furnaces, in per cents: 10—$31 to $32; 11—$33 to $34; 12—$35 to $36; 13—$37 to $38; 15—$41.50 to $42.50; 16—$43 to $44.

with malleable 50 cents higher. Some small lots of Royal Dutch iron are moving at $22.50, ex-vessel.

Buffalo, July 2.—Pig iron sales continue light. Buffalo furnaces are offering No. 2 plain foundry as low as $18 in the East, but ask $19.50 in the local district. Shipments show some reaction.

Youngstown, O., July 2.—Valley pig iron producers are comfortably booked for third quarter. Shipments continue encouraging. Bessemer and malleable hold to $19, while No. 2 foundry and basic are $18.50, valley.

Cleveland, July 2.—While pig iron shipments in June show a slight letdown from the high average rate of May, and July expectations are not fully as good as June, furnace interests are fortified against sudden price recessions by the large volume of business now on their books for third quarter. This amounts to about 80 per cent of normal output for some leading makers, and one or two with steelworks connections are no longer soliciting business for the next three months. The past week gave further evidence of stable conditions, when furnace interests at Cleveland booked 36,000 tons. An Ohio melter has closed for 4000 tons of foundry iron for last half, at the market. General Electric Co. has placed approximately 1200 tons for its Erie, Pa., plant, while another Erie melter is reported to have ordered about 1000 tons. Westinghouse Electric & Mfg. Co. divided an order for 1200 tons for its Cleveland plant between two Cleveland producers. Lake furnace prices generally are unchanged. The Cleveland furnaces continue to quote $18.50, base, for outside delivery and $19 for local shipment.

Cincinnati, July 2.—Continued weakness of southern iron has brought an undercurrent of uneasiness to the northern market. A southern Ohio buyer placed an order for 3000 tons of northern iron for second half. Other sales were small. Northern furnaces are maintaining quotations at $18.50, base, furnace, while southern furnaces are seeking business at $15, base, Birmingham.

Chicago, July 2.—Pig iron deliveries are at an unusually high rate for this season but are declining slightly. Operations for some malleable foundries have been reduced to 75 to 80 per cent. A number of melters took

(*Concluded on Page* 40)

Coke

Purchases Taper Off, While Shipments Continue Active—Connellsville Output Low

NEW orders for coke are small, but shipments on contracts continue fairly active. This applies to beehive and by-product foundry and furnace grades. A sharp decline by merchant ovens is noted in output in the Connellsville district, where production is lowest since January, but 50 per cent above the rate a year ago. Accumulations are not large and prices steady.

Pittsburgh, July 2.—Beehive coke activity still consists of occasional renewals of expiring contracts for furnace fuel, with a dearth of buying in the spot market. Shipments against old orders are tapering and this is reflected in a sharp decline in production by merchant ovens. Current output is the lowest since January, but over 50 per cent ahead of the rate a year ago. Close regulation of production is preventing large accumulations and distress fuel generally is lacking. Foundry coke demand continues slow. Some contracts remain to be closed. Little heating coke has been placed so far. Prices of all grades are unchanged.

Production of coke in Connellsville district for the week ended June 22 was 102,840 tons, compared with 110,450 tons in the preceding week, according to *Connellsville Courier*.

Boston, July 2.—Foundries continue to take only enough coke for immediate requirements. A quiet market is forecast for some weeks. Prices are steady.

New York, July 2.—While spot buying of coke is slack, specifications against contracts are brisk. Prices continue unchanged. Low operations at several pipe and stove plate foundries are having a slightly easing effect on coke demand.

Cincinnati, July 2.—Specifications for by-product foundry coke were better in June than during May, although new business has dropped. Prices are steady.

Chicago, July 2.—New buying of by-product foundry coke is quiet, but shipments are fairly steady. Many consumers have covered for last half. Quotations are $8, ovens, and $8.75 delivered locally.

St. Louis, July 2.—Orders for foundry coke are small and for prompt delivery. Shipments of metallurgical coke are maintained well above the usual seasonal average. Prices are steady.

Birmingham, Ala., July 2.—Coke production is steady, all but 75 of the by-product ovens in this territory being in operation. Foundry coke is firm at $5, base, Birmingham.

Coke Prices

Prices per Net Ton

Beehive Ovens	
Connellsville furnace	$2.75 to 2.85
Connellsville foundry	3.75 to 4.85
New River foundry	6.00 to 6.50
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.75
By-Product Foundry	
Newark, N. J., del.	$9.00 to 9.40
Chicago ovens	8.00
New England del.	11.00
St. Louis del.	9.00
Birmingham, ovens	5.00
Indianapolis, del.	8.25
Ashland ,Ky., ovens, Connell. basis	6.50
Portsmouth, O., ov., Connell. basis	6.50
Buffalo ovens	8.75
Detroit, ovens	9.00
Philadelphia, del.	9.00

Ferroalloys

Specifications Well Maintained—Some Additional Contracts Closed

Pittsburgh, July 2.—Shipments of ferromanganese and spiegeleisen last month showed little decline from May, in contrast to the usual seasonal trend. Specifications for some special ferroalloys declined last month, although the total movement was seasonally heavy. Sellers continue to pick up occasional carload orders for ferromanganese and spiegeleisen, at currently quoted prices. Fluorspar is quiet but firm at $18.

New York, July 2.—Specifications for ferromanganese and spiegeleisen were curtailed in some directions late in June but are again active. Two moderate size tonages of ferromanganese for second half were closed during the week. Ferromanganese continues $105, duty paid, tidewater. Spiegeleisen consumers generally are under contract to the end of the year. Spiegeleisen continues $34, furnace, for 19 to 21 per cent. Some English spiegeleisen, with high manganese content, has sold at $40, delivered to consuming plants in the Chicago district, for 26 to 28 per cent manganese.

R.J.WeanFormsCompany

R. J. Wean, vice president and sales manager of the Aetna-Standard Engineering Co., Youngstown, O., recently sold his interest in that company. He has established his own company—the Wean Engineering Co.—in Youngstown to engage in special engineering and sales work in sheet and tin mill equipment lines. He will have associated with him as combustion engineer, the Flinn & Dreffein Co., Chicago. Mr. Wean was vice president of the Aetna Foundry & Machine Co. before that company was merged with the Standard Engineering Co. in 1925.

Bolts, Nuts, Rivets

Third Quarter Practically Covered at Undiminished Rate

NUT AND BOLT PRICES, PAGE 36

Pittsburgh, July 2.—Incoming business for bolts, nuts and rivets in June compared favorably with the May volume, and specifications show little change since early last month. Practically all third quarter contracts have been received. The market continues 60 to 70 off for bolts and nuts, and 3.10c, Pittsburgh, for large rivets. Operations are steady and unchanged at 70 to 75 per cent.

Chicago, July 2.—Most buyers of bolts, nuts and rivets have completed contracts for third quarter. Producers of bolts and nuts are closing down for inventory and it is expected orders will accumulate. Specifications are slightly ahead of a year ago. Declines are noted in farm implement and automotive lines, as some farm implement builders are in their mid-year inventory period. Large structural rivets remain steady at 3.20c, Chicago, in carload lots. Nuts and bolts are steady at 60 to 70 off list.

Implement Sales Boom

Toronto, Ont., July 2.—The bumper harvest of last year and favorable prospects for 1929 crops have expanded the market for agricultural implements in the West, especially for tractors and combine-harvesters. Western implement dealers reports sales far ahead of any previous year. British and American companies are making intensive studies of the field.

Ferroalloy Prices

(In dollars, except ferrochrome)

Ferromanganese, 78 to 82 per cent, tidewater, duty paid	$105.00
Ferromanganese, del. Pittsburgh	109.79
Spiegeleisen, 19 to 21 per cent, domestic furnace, spot†	34.00
*Ferrosilicon, 50 per cent, freight allowed, carloads	88.50
*Do, less carload	88.50
Do., 75 per cent	130.00 to 150.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. per lb. con., del.	11.00
Do., for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	1.35 to 1.45
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.65
Ferro-carbon-titanium carload producer's plant, net ton	160.00
Do., one ton to carload	170.00
Ferrophosphorus, per ton, carload 17 to 19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic, per ton, carload, 23-25% f.o.b. Anniston, Ala. (24 per cent)	122.50

†Quantity diff. apply on 100 tons and over.
*These prices contract, spot $5 higher.

Scrap

Summer Decline Shows Firm Undertone—Prices Change Little Both Up and Down

SUMMER slackness in demand for iron and steel scrap is having its effect on demand, but this factor, with heavy production, has not weakened the market materially. Prices have sagged slightly in some grades, while others have advanced on short supply and sustained demand.

Chicago, July 2.—Iron and steel scrap remains seasonably weak, but an undertone of strength prevails. Sellers have taken a position of neutrality, with a slight tendency toward buying against future obligations. The strong short interest of the past few weeks has disappeared. A substantial tonnage of heavy melting steel has been sold at $15, in addition to another tonnage several days ago at $15.25. The range generally quoted remains at $14.75 to $15.25. Railroad malleable is even further depressed, several dealers having revised quotations downward by 50 cents. Prices remain fairly strong for a number of specialties and electric furnace grades.

Boston, July 2.—While there is a generally firmer situation in iron and steel scrap in New England, shipments have lagged because of supply. There has been good buying for export. A steamer has left with some 2000 tons for Stettin, Germany, and another cleared Thursday with 1464 tons for Danzig.

Buffalo, July 2.—No new buying of scrap is reported by dealers. Shipments will be light this week and nominal prices prevail. Dealers look

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Gross tons delivered to consumers, except where otherwise stated

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	12.00 to 12.50
Boston, dealers	12.00 to 12.25
Boston, No. 2	10.00 to 10.50
Buffalo, No. 1	16.00 to 17.50
Buffalo, No. 2	14.50 to 14.75
Chicago	14.75 to 15.25
Cincinnati, deal.	13.00 to 13.50
Cleveland, No. 1	15.00 to 15.50
Cleveland, No. 2	14.00 to 14.50
Detroit, No. 1 deal.	13.50 to 14.00
Detroit, No. 2 deal.	11.50 to 12.00
East Pa., del. mill	16.50
N. Y., deal. R. R.	12.50 to 13.35
N. Y., deal. yd.	8.25 to 9.25
Pittsburgh, No. 1	18.00 to 18.50
St. Louis, No. 1	14.00 to 14.25
Valleys, No. 1	17.25 to 17.75

COMPRESSED SHEETS

Buffalo (dealers)	14.50 to 14.75
Chicago	13.25 to 13.75
Cleveland	15.00 to 15.50
Detroit, dealers	14.00 to 14.50
E. Pa. new mat.	15.00
Pittsburgh	18.00 to 18.50
Valleys	17.00 to 17.50

BUNDLED SHEETS

Buffalo	12.00 to 12.50
Cincinnati, deal.	10.75 to 11.25
Cleveland	12.50 to 13.00
Eastern Pa.	11.50
Pittsburgh	16.00 to 16.50
St. Louis	10.00 to 10.50

SHEET CLIPPINGS LOOSE

Chicago	8.75 to 9.25
Cincinnati	9.50 to 10.00
Detroit, dealers	8.50 to 9.00
St. Louis	10.00 to 10.50

STEEL RAILS, SHORT

Birmingham	14.00 to 14.50
Boston	10.50 to 11.25
Buffalo	19.00 to 19.25
Chicago (3 feet)	18.00 to 18.50
Chicago, 2 ft. and under	18.50 to 19.00
Cincinnati, deal.	18.50 to 19.00
Detroit, dealers	17.00 to 17.50
Pittsburgh (3 ft.)	20.00 to 21.00
Pittsburgh, 2 ft. and under	20.50 to 21.50
St. Louis	16.50 to 17.00

STOVE PLATE

Birmingham	12.50 to 13.00
Boston consumers	11.50 to 12.00
Buffalo	12.00 to 12.50
Chicago, net	11.50 to 12.00
Cinn., deal., net	9.25 to 9.75
Detroit, net deal.	9.50 to 10.00
Eastern Pa.	11.50 to 12.00
N. Y., deal., mill	8.00 to 8.50
St. Louis	12.50 to 13.00

COUPLERS, SPRINGS

Buffalo	19.00 to 19.25
Chicago	16.50 to 17.00
Eastern Pa.	20.50 to 21.50
Pittsburgh	21.00 to 21.50
St. Louis	14.75 to 15.25

ANGLE BARS—STEEL

Chicago	17.00 to 17.50
St. Louis	13.50 to 14.00

LOW PHOSPHORUS

Buffalo, billets and bloom crops	19.00 to 19.50
Cleve. billet and bloom crops	17.50 to 18.00
Eastern Pa.	21.00 to 22.00
Pitts. billet and bloom crops	22.50 to 23.00
Pitts., sheet bar crops	20.50 to 21.50

FROGS, SWITCHES, GUARDS

Chicago	16.50 to 17.00
St. Louis	15.00 to 15.50

SHOVELING STEEL

Chicago	14.75 to 15.25
Cleveland	11.00 to 11.50
Detroit, dealers	9.00 to 9.50
St. Louis	13.00 to 13.50

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	10.00 to 11.00
Boston, dealers	11.25 to 12.00
Buffalo, No. 1	13.50 to 14.00
Buffalo, No. 2	16.00 to 16.50
Chicago, No. 1	14.85 to 15.40
Chicago, No. 2	14.75 to 15.25
Cinn., No. 2	13.00 to 13.50
Eastern Pa.	16.00 to 16.50
N. Y., No. 1 deal.	12.00 to 12.50
Pittsburgh, No. 2	18.00 to 18.50
St. Louis, No. 1	13.00 to 13.50
St. Louis, No. 2	13.50 to 14.00

SPECIFICATION PIPE

Boston	9.75 to 10.00
Eastern Pa.	15.50
New York, deal.	10.75

BUSHELING

Buffalo, No. 1	14.50 to 14.75
Chicago, No. 1	13.00 to 13.50
Cinn., No. 1 deal.	11.00 to 11.25
Cinn., No. 2	6.75 to 7.00
Cleveland, No. 1	13.50 to 14.00
Cleveland, No. 2	10.75 to 11.00
Detroit, No. 1 deal.	12.25 to 12.75
St. Louis, No. 1	10.00 to 10.50
Valleys, new No. 1	16.00 to 16.50

MACHINE SHOP TURNINGS

Birmingham	7.00 to 8.00
Boston	6.50 to 6.75
Buffalo	7.25 to 7.75
Chicago	8.00 to 8.50
Cincinnati, deal.	8.50 to 9.00
Cleveland	9.00 to 9.50
Detroit	7.50 to 8.00
Eastern Pa.	11.50
New York, deal.	7.50
Pittsburgh	11.50 to 12.00
St. Louis	8.00 to 8.50
Valleys	11.00 to 11.25

MIXED BORINGS, TURNINGS
For blast furnace use

Boston, dealers	6.00 to 6.25
Buffalo	11.00 to 11.50
Cincinnati, deal.	9.00 to 9.25
Cleveland	10.75 to 11.00
Detroit, dealers	8.75 to 9.25
Eastern Pa.	10.50 to 11.00
New York, deal.	7.00 to 7.25
Pittsburgh	12.00 to 12.50

CAST IRON BORINGS

Birmingham, chem.	13.00 to 13.50
Birmingham, plain	7.00 to 8.00
Boston chem.	10.00 to 10.25
Boston, dealers	6.50 to 6.60
Buffalo	11.00 to 11.50
Chicago	9.75 to 10.25
Cincinnati, deal.	9.00 to 9.25
Cleveland	10.75 to 11.00
Detroit, dealers	8.75 to 9.25
Eastern Pa.	11.00 to 11.50
Eastern Pa., chem.	14.50
New York, deal.	7.00 to 7.25
Pittsburgh	12.00 to 12.50
St. Louis	9.50 to 10.00

PIPE AND FLUES

Cincinnati, deal.	9.00 to 9.50

RAILROAD GRATE BARS

Buffalo	12.25 to 12.75
Chicago, net	11.50 to 12.00
Cincinnati	10.00 to 10.50
Eastern Pa.	12.00
New York, deal.	8.75 to 9.25
St. Louis	12.50 to 13.00

FORGE FLASHINGS

Boston dealers	10.00 to 10.25
Buffalo	13.75 to 14.25
Chicago	10.50 to 11.00
Cleve. over 10 in.	13.25 to 13.50
Detroit	12.00 to 12.50

FORGE SCRAP

Boston, dealers	8.75 to 9.00
Chicago	18.00 to 18.50
Eastern Pa.	14.00

ARCH BARS AND TRANSOMS

Chicago, net	20.50 to 21.00
St. Louis	21.50 to 22.00

Iron, Steel Works Scrap

AXLE TURNINGS

Boston, deal	6.75 to 7.00
Buffalo	14.50 to 15.00
Chicago	13.00 to 13.50
Cleveland	12.50 to 13.00
Eastern Pa.	14.50 to 15.00
Pittsburgh	15.75 to 16.75
St. Louis	10.00 to 10.50

STEEL CAR AXLES

Birmingham	17.00 to 18.00
Boston, ship point	16.50 to 17.00
Buffalo	19.50 to 20.00
Chicago	18.50 to 19.05
Eastern Pa.	23.00 to 23.50
Pittsburgh	21.50 to 22.00
St. Louis	19.00 to 19.50

SHAFTING

Boston, ship point	14.00 to 14.25
Chicago	17.10 to 17.65
Eastern Pa.	19.00 to 20.00
New York, deal.	14.00 to 14.50
St. Louis	18.50 to 19.00

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	11.00 to 12.00
Boston, iron	14.00 to 14.50
Buffalo, iron	14.00 to 14.50
Buffalo, steel	19.00 to 19.25
Chicago, iron	14.00 to 14.50
Chi., rolled steel	18.50 to 19.00
Cincinnati	12.50 to 13.00
Eastern Pa. cast.	16.50
Eastern Pa., rolled	20.50 to 21.50
N. Y., iron, deal	12.00 to 12.50
Pittsburgh, iron	16.25 to 16.75
Pittsburgh, steel	21.00 to 21.50
St. Louis, iron	14.00 to 14.50
St. Louis, steel	17.00 to 17.50

No. 1 CAST SCRAP

Birmingham, cup.	13.00 to 14.00
Buffalo	15.75 to 16.25
Boston, textile	16.00 to 16.50
Chicago, mach.	16.25 to 16.80
Chicago, railroad	15.25 to 15.66
Chicago, agri.	14.65 to 15.20
Cincinnati, Mach. cupolas, gross	19.50 to 20.00
Cleveland, cupola	16.00 to 16.50
Detroit, net, deal.	12.00 to 13.00
East Pa., cupola	17.00
N. Y., cup., deal.	13.00 to 13.50
N. Y., del. local foundries	17.00
Pittsburgh, cupola	15.00 to 16.00
San. Fran., del.	13.50 to 14.00
Seattle	15.00 to 15.25
St. L. No. 1 mach.	15.25 to 15.75
St. Louis, No. 1	14.50 to 15.00

HEAVY CAST

Boston	10.50 to 11.00
Buffalo, breakable	12.75 to 13.25
Cleve., breakable	12.50 to 12.75
Detroit, auto, net dealers	12.00 to 13.00
Detroit, break. deal	9.00 to 9.50
Eastern Pa.	15.00
New York, deal.	10.50 to 11.00
Pittsburgh	13.00 to 13.50

MALLEABLE

Boston, railroad	18.50 to 19.00
Buffalo	18.00 to 18.50
Chicago, agri.	16.00 to 16.50
Chicago, railroad	17.00 to 17.50
Cinn., R. R., deal	15.25 to 15.75
Cinn., agri., deal	14.25 to 14.75
Cleveland, rail.	17.50 to 18.00
Detroit auto deal	15.00 to 15.25
St. Louis, rail.	15.00 to 15.50

Miscellaneous Scrap

RAILS FOR ROLLING
5 feet and over

Birmingham	13.50 to 14.50
Rails, scrap, Boston	12.50 to 12.75
Buffalo	16.50 to 17.00
Chicago	17.50 to 18.00
Eastern Pa.	17.00 to 17.50
New York.	12.75 to 13.25
St. Louis	15.50 to 16.00

LOCOMOTIVE TIRES

Chicago, cut	18.50 to 19.00
St. Louis, No. 1	16.00 to 16.50

LOW PHOS. PUNCHINGS

Chicago	16.50 to 17.00
Pittsburgh	20.00 to 21.00

for a renewal of buying by leading consumers by the middle of this month.

New York, July 2.—Scrap prices remain firm with $16.50 paid for No. 1 heavy melting steel, delivered eastern Pennsylvania. Mills are buying in moderate volume, although some have good supplies. Offerings are not heavy and this situation is stressed by a flurry in export. A shipment for Japan, 3000 tons of No. 1 and No. 2, moved at $12.25, dock. Dealers' buying prices on rails for rolling are up 50 cents to $12.75 to $13.25. One dealer is quoting $13 as minimum. Specification wrought pipe is easier, but other grades are firm.

Cleveland, July 2.—Leading consumer of scrap has curtailed shipment of blast furnace grades in addition to reduction of steel shipments from the Detroit area and complete cessation of movement by rail. Other consumers are taking shipments steadily. Buying is confined to odd lots for shipment on orders. Prices are firm, with No. 1 steel $15 to $15.50 and No. 2 $1 less. Some material is moving to the Youngstown district, where heavy melting steel is $17.25 to $17.75 and compressed sheets $17 to $17.50.

Cincinnati, July 2.—Firmness of the iron and steel scrap is reflected in prices. Some scarcity of better grades and increased activity in specialties have brought the market into a fairly good position in the past week.

St. Louis, July 2.—For the third consecutive week iron and steel scrap prices have undergone no change. Trading is quiet, confined mainly to sales between dealers. There is little speculative interest, and not much material is being laid down in yards. Consumers need scrap and would buy at a price but dealers are unwilling to sell short, due to difficulty experienced in obtaining material to apply on contracts.

Birmingham, Ala., July 2.—Hand-to-mouth buying is the rule in iron and steel scrap. Heavy melting steel commands $12.50 for the best quality but one consumer is offering much less and finding takers.

Toronto, Ont., July 2.—The iron and steel scrap market is without change. Consumers buy sparingly for immediate needs and show little interest in future requirements. While a few have placed third quarter contracts, the majority is satisfied to buy as demands dictante.

Philadelphia, July 2.—Considerable additional tonnage of heavy melting steel has been bought at $16.50, delivered Eastern Pennsylvania, in the past week and the market is firm at this figure. Otherwise buying is scattered and prices are unchanged except that borings have been reduced 50 cents.

Pittsburgh, July 2.—Scrap continues quiet from the standpoint of large tonnages and the market is seasonally quiet. Closing of two railroad lists this week is expected to have an important bearing on the price trend. Dealers find difficulty in obtaining more than $18.50 for heavy melting steel and difficult to buy at less than $18. Most grades are steady. Bars against railroad shipments by one mill have been lifted but are effective at another point.

Canadian Scrap

Dealers' Buying Prices

MONTREAL

Per Gross Ton

Iron axles	$22.00
Steel axles	20.00
Car wheels	16.00
Stove plate	13.00
Wrought pipe	6.00
Turnings	6.50
Heavy melting steel	8.00

TORONTO

Steel axles	15.00
Iron axles	17.00
Heavy melting steel	9.50
Turnings	7.50
No. 1 mach. cast (net)	16.00
Malleable (net)	12.50

Semifinished Steel

Billets, Slabs and Sheet Bars Established at $35

SEMIFINISHED STEEL PRICES, PAGE 36

Pittsburgh, July 2.—Considerable contracting remains to be done in semifinished steel for third quarter. Most large users are covered for several weeks ahead, with shipments due them against old contracts. Although some producers are practically out of the market and are continuing to name $36, the price has settled generally to $35 for billets, sheet bars and slabs. Sales at these figures are light. An unstated tonnage of slabs is reported to have been sold at $34, for spot delivery. Nothing below $40 is noted in forging billets. Wire rods are firm, active at $42.

New York, July 2.—The market on standard open-hearth rerolling billets has become established at $34 to $36, base, Pittsburgh, while that on open-hearth forging billets is $39 to $41. A few wire rod contracts have been placed for third quarter at $42, base, Pittsburgh, and this price appears firm.

Youngstown, O., July 2.—Billets, sheet bars and slabs have settled to $35, Pittsburgh and Youngstown. The usual differential between sheet bars and the other forms which for years has been about $1 a ton in favor of sheet bars, seems to have disappeared. Practically all consumers have completed contracting for the early portion of the third quarter and many of them for the entire period.

Cleveland, July 2.—Demand for semifinished steel is active. The leading merchant producer here continues operating at 100 per cent, and has specifications ahead at this rate for about 20 days. Contracts have been renewed with regular customers, the price of sheet bars continuing at $35, Cleveland or Youngstown, as in the second quarter, while billets and slabs have been advanced $1 to $35. Little open market tonnage is available.

Chicago, July 2.—Quarterly contracts for semifinished steel are being closed on the basis of $37, Chicago, for rerolling or commercial billets. Forging billets are quoted at $42, base, and sheet bars $37. Semifinished producers are unable to make definite delivery.

Philadelphia, July 2.—The billet market now is established at an advance of $1 over the former level, instead of the contemplated $2. Current prices are $35, base, Pittsburgh, for rerollers and $40 for forging quality.

Pig Iron

(*Concluded from Page 37*)

tonnage last month that had been purchased for July. Practically no iron is available to brokers from steelworks blast furnaces. One manufacturing interest with subsidiary blast furnace connections has been buying heavily in the merchant market for its foundries. Silvery iron is reported unsteady, with sales recently at 50 cents to $1 a ton under schedules. The eighth cargo of eastern iron has been unloaded here, making a total of 20,000 to 25,000 tons shipped to Chicago-Milwaukee district by boat this season. Spot and contract sales are at $20, Chicago furnace, for base grades.

No. 5 Iroquois stack, South Chicago, has been blown out for relining, leaving five or six available merchant furnaces in this district in blast. The Iroquois stack is expected to be out about 30 days.

Philadelphia, July 2.—Many consumers in this district have carryovers from their second quarter pig iron contracts and do not need to buy additional foundry iron now. Current demand, however, is fairly good, comprising many small and moderate lots. Eastern Pennsylvania furnaces continue well booked and hold to $21.50, base, furnace, although occasionally outside furnaces take business here at slightly less. Several sales of Birmingham foundry iron have been made here recently at $15, base, Birmingham, plus all-rail freight, but these are limited mainly to carloads.

St. Louis, July 2.—Despite the heavy melt and small consumer stocks, contracting for third quarter is smaller than at any similar period in half a decade. Orders for spot shipment are fairly active. The chief reason for the waiting attitude is price uncertainty, emphasized by the reduction of 50 cents per ton in southern iron to $15, base, Birmingham base. Shipments continue on a large scale.

Birmingham, Ala., July 2.—Delivery of pig iron from the Birmingham district is increasing slightly, since the price was reduced to $15, base, Birmingham. Reports are heard of a further concession of 25 cents a ton in Middle West.

Toronto, Ont., July 2.—A strong demand for third quarter pig iron featured business in the Canadian market the past week. Most melters have now covered to the end of September. Spot buying is moderately active. Prices are slightly stronger and producers again have a differential of 50 cents between No. 1 and No. 2 foundry iron.

Bars

First Half Tonnage Heavy—Summer Recession Not Great—Deliveries Still Delayed

SUMMER slackening in demand and some interference by mid-year inventory have reduced specifications by users somewhat. Backlogs are being whittled down, but deliveries continue much deferred in spite of this. Chicago mills believe first half was the best for production of any peacetime six months. Current prices are generally firm and inquiries in New York numerous.

BAR PRICES, PAGE 35

Chicago, July 2.—Sales and shipments of bar mill and other finished steel products in first half are estimated 20 to 25 per cent above a year ago. While final figures are not available on ingot production for the district, estimates for the half indicate a gain of 10 to 15 per cent over last year. Both output and shipments are believed the highest of any similar period in peacetime years. Third quarter tonnage is being added to bar mill books, sales in the past week ranking fifth among weekly sales totals this year. Many contract buyers already have obligated themselves. Declines in specifications for automotive steel are more noticeable, but total bar mill specifications approximate the weekly averages of this year. Bar mill deliveries average 10 to 12 weeks. One producer names 12 weeks as a minimum.

Occasional orders for soft steel bars, particularly those involving interplant switching, are at 2.15c, Chicago, but 2.05c is generally regarded as the base quotation.

New York, July 2.—Merchant steel bars are moving actively. June business has exceeded expectations of most sellers; in fact, second quarter business has been heavier than generally expected. Inquiries still are numerous, with the market firm at 2.29c to 2.34c, New York. Common iron bars are firmer and some recent low prices have disappeared. On most transactions the price is 1.90c, base, Pittsburgh, or 2.24c, base, delivered New York. On especially attractive business this figure is cut $1 to $2 per ton. Volume of demand for iron bars continues good.

Pittsburgh, July 2.—June specifications for hot-rolled merchant bars were light compared with preceding months, although total incoming business was seasonally heavy. For some mills the decrease was as large as 20 per cent. Buyers lacked incentive to specify second quarter contracts fully. Despite the fact mill backlogs have been reduced, delivery on some sizes still is extended as far as four weeks. The market continues to have a steady tone in new contracting, 1.95c, Pittsburgh, generally being well observed.

Cleveland, July 2.—June specifications for soft steel bars for most sellers fell slightly under May, but show a moderate increase over those of last June. A year ago, June was the low point of the summer, and July specifications turned upward. First half tonnage was considerably higher than in 1928. Pressure for delivery, especially on the smaller sizes, continues marked. Automotive needs reflect model-changing time. Local mills quote 1.90c to 1.95c, base, Cleveland, and outside mills ask 1.95c to 2.00c, delivered Cleveland.

Cleveland, July 2.—Nickel Plate railroad has placed 1000 tons of rails with a Pittsburgh district mill.

Philadelphia, July 2.—The iron bar market is considerably firmer, 1.85c, base, Pittsburgh, now being minimum. In fact, this figure is exceptional and the usual price is 1.90c.

Wilson-Snyder Puts Out Debentures

An offering of $850,000 of Wilson-Snyder Mfg. Corp. 12-year 6 per cent guaranteed gold debentures is being made by the First National bank, Pittsburgh, and the Peoples Savings & Trust Co. Principal, interest and sinking fund payments are guaranteed by the Oil Well Supply Co., which recently acquired all the common stock of the Wilson-Snyder Mfg. Corp. The latter company manufactures pumping equipment for use in production, transportation and refining of oil.

C. Davis & Co., Pittsburgh, dealers in iron, have moved their offices to West Homestead, Pa., to their plant.

Plates

Market Continues Active—Deliveries Slightly Improved—Some Price Concessions Renewed

PLATE demand is well sustained. Oil tank fabricators closed for 8000 to 10,000 tons at Chicago in the past week, and about 13,000 tons are pending. Barge work at Pittsburgh took 30,000 tons of plates in first six months of the year. The navy has ordered two cruisers, requiring 6500 tons of steel each. Prices generally are steady, some lower-price contracts being extended.

PLATE PRICES, PAGE 35

Pittsburgh, July 2.—Plate mills are operating with substantial backlogs, with a steady rate of specifications. Unfilled business was increased last month although production generally has not been at capacity due to mills' requirements of steel for other purposes. Barge work placed during first half in this district took about 30,000 tons of plates. Contracting for third quarter generally is on the basis of 1.95c, Pittsburgh, although some lower-price contracts are being extended.

New York, July 2.—Plate demand shows comparatively little reduction from the volume of recent months and is unusual for this season. It is expected that orders for 7500 tons of plates for 150 New York Central locomotives shortly will be distributed by American Locomotive Co. John T. Welsh has the general contract for a pipe line in the Borough of Queens, to require about 1600 tons of plates. The navy department has placed two 10,000-ton cruisers, one to be built at the Quincy yard of Bethlehem Shipbuilding Corp., and the other at Puget Sound navy yard. These boats will require about 6500 tons of steel each. International Mercantile Marine Co. is contemplating buying another large combination passenger and freight boat. Prices on plates continue 1.95c to 2.05c, base, Pittsburgh, or 2.05c to 2.15c, base, Coatesville.

Philadelphia, July 2.—Plate specifications continue good and show an increase in some directions. There is no sign of a summer letdown. Prices are firm. The Merchants & Miners Transportation Co. has placed for reconditioning by Bethlehem Shipbuilding Co., at Sparrows Point, two boats it recently purchased from the shipping board. Central Railroad of New Jersey is inquiring for a carfloat, involving 650 tons of steel, and the department of commerce is taking bids July 25 on a tender requiring 360 tons, mainly plates.

Cleveland, July 2.—Platemakers are asked to bid on about 750 tons of plates for 25 locomotives placed with Lima Locomotive Works by the Pittsburgh & Lake Erie. Wabash locomotives still are pending. Ralston Steel Car Co. will buy a plate tonnage for Pennsylvania cars. More than 100 tons of boiler steel will be furnished by Lukens Steel Co., for Wabash car ferry, awarded Toledo Shipbuilding Co.

It is understood the other plates and shapes, about 2500 tons, will come from Carnegie Steel Co. Open market orders bring 1.95c, but large contract tonnage is billed at 1.90c, Pittsburgh.

Chicago, July 2.—Quarterly contracts with fabricators of oil storage tanks for their plate requirements totaled 8000 to 10,000 tons in the past week. One plate mill booked 1200 tons of miscellaneous oil tankage for the Southwest. Estimates are that tank plate inquiry for refinery work now totals about 13,000 tons, including 2000 tons for White Star Refinery Co. project in Detroit. Little change is shown in the delivery position, and mills have backlogs extending into late September. The quotation of 2.05c, Chicago, is used as the base price for most business.

CONTRACTS PLACED

5370 tons, 15 118,000-barrel tanks, Texas Oil Co., Los Angeles, to Western Pipe & Steel Co.

400 tons, two 200,000 and one 100,000 cubic feet gas holders for Pacific Gas & Electric Co., Hayward, Calif., to Western Pipe & Steel Co.

CONTRACTS PENDING

10,000 tons, riveted steel pipe line, Seattle, Cedar River project. Bids July 5.

Tutein Awarded Damages for Broken Contract

New York, July 2.—Arbitrators in the case between E. Arthur Tutein Inc., Boston, and the Hudson Valley Coke & Products Corp., Troy, N. Y., have awarded the former damages of $302,500 for breach of contract in the sale of pig iron and coke. The arbitrators were Sherman Whipple, Boston, for the Tutein company; United States Senator Wagner, New York, for the Hudson Valley company; Louis K. Comstock, New York.

The contract was entered into when the Tutein organization was reported to have bought $250,000 preferred stock in the Hudson Valley corporation, with the understanding the former was to have exclusive sales rights for products of the latter for 20 years. About a year later the Tutein company was discharged as exclusive sales agent.

Arbitration was started June 9, 1927 before a board composed of D. A. Schulte, Senator Wagner and Mr. Whipple, hearings being started March 22, 1928. Mr. Schulte resigned after a time and delayed hearings until Dec. 1928. Mr. Comstock then was appointed to the board by Charles M. Schwab, president of the American Iron and Steel institute. Hearings were completed April 26.

Copper, lead, gold and silver produced in 1928 from ore sold or treated in Oregon was $296,446, or 25 per cent less than in 1927, states the final report of the bureau of mines.

Pipe

Activity Widespread—Individual Tonnages Increase in Size—Texas Oil Line Is Placed

ACTIVITY in cast pipe is widespread. Seattle placed 2241 tons; Macon, Ga., awarded 9480 feet of 12 and 16-inch; and a New Haven, Conn., waterworks job took 3000 tons. Several pending lots involve 1800, 1425, 1200, 1148, 1000 and 1000 tons each respectively. A Milwaukee interest was awarded 20,000 tons of steel pipe for an oil line in Texas.

PIPE PRICES, PAGE 36

New York, July 2.—Municipal buying is slower, while private buying of cast pipe remains fair. Competition for municipal business has shown evidence of unstable prices in some instances. With one or two exceptions, mills are not operating much above 60 per cent. A fair volume of fittings is being booked. Yonkers, N. Y., wants 1800 tons of 12 to 18-inch class C cast pipe.

Boston, July 2.—Pipe prices continued firm last week, though concessions still are obtainable on larger diameters. New Haven Water Works placed 3000 tons of 42-inch pipe with an unnamed maker. Hopkinton, Mass., wants 1000 tons. Private business continues good throughout the district.

Pittsburgh, July 2.—Lapwelded pipe producers have comfortable backlogs as the result of recent line pipe awards. Operations are expected to be well maintained during the summer. Little change is noted in demand for tubular material from the oil country. Although the decreased activity in building this year compared with 1928, has affected merchant pipe demand, total volume of business is fairly large for this period. In mechanical tubing and locomotive and boiler tubing, a steady demand continues, eclipsing last year's rate. Operations are steady and unchanged.

The National Tube Co., is reported to have been awarded 50,000 tons of steel pipe for a line from Birmingham, Ala., to Atlanta, Ga. A similar tonnage also is reported to have gone to A. O. Smith Corp., for the same project.

Cleveland, July 2.—Merchant pipe tonnage in June was slightly above May for several producers. One large valley maker is filled up on large outside diameter pipe and seamless tubes for the remainder of 1929. The Lorain, O., plant of the National Tube Co. is down to a 53 per cent basis this week for repairs. Other producers, too, will take advantage of the holiday to make repairs. Cleveland has let the general contract for changing over gas lights to electricity to the McNichols Co., Chicago, which interests will buy 300 tons of 2-inch pipe in 7-foot lengths, probably this week.

Chicago, July 2.—No pickup is developing in the North Central cast iron water pipe markets. Hinsdale, Ill., has let the general contract on a $400,000 sewage disposal plant. The pipe probably will be purchased soon. Milwaukee is ordering 500 to 1000 tons of 60-inch sewage pipe. Kimberly and Beaver Dam, Wis., each inquire for both water and sewage pipe. The latter project will take 400 to 500 tons. Grand Rapids, Mich., purchased about 200 tons. Carload prices remain steady on the basis of $45.20 to $46.20, delivered Chicago, for the 6 to 24-inch diameters.

According to word received here, A. O. Smith Corp., Milwaukee, has been awarded 20,000 tons of 20-inch pipe for a 100-mile oil line from Petrolia to Fort Worth, Tex., for the Lone Star Gas Co.

Birmingham, Ala., July 2.—Cast iron pressure pipe lettings have not been numerous and steady production and shipments have cut into unfilled tonnage. Leading manufacturers still believe a good year will be rounded out. July will see production equal to any month in 1929, with some yard stocks moved out. Quotations are $37 to $38 on 6-inch and over sizes.

CONTRACTS PLACED

9480 feet of centrifugally cast pipe for Macon, Ga., including 5810 feet of 12-inch and 3670 feet of 16-inch, to United States Pipe & Foundry Co.

3000 tons, 42-inch pipe, New Haven Water Works, New Haven, Conn., to unstated maker.

224 tons, 12-inch class D, improvement Westlake avenue North, Seattle, to unstated interest.

200 tons, 4 to 18-inch water pipe for Grand Rapids, Mich., awarded through contractor.

STEEL PIPE

20,000 tons, 20-inch for 100-mile oil line from Petrolia to Fort Worth, Tex., for Lone Star Gas Co. to A. O. Smith Corp.

CONTRACTS PENDING

1800 tons, 12 to 18-inch class C cast pipe for Yonkers, N. Y.

1425 tons, 8-inch class B, Los Angeles; United States Pipe & Foundry Co. low bidder.

1200 tons, 3 to 16-inch, state hospital, Rockland county, N. Y.; Kuchar Bros. low on general contract.

1148 tons, 24-inch class C, Los Angeles; Grinnell Co. low bidder.

1000 tons, 6 to 16-inch pipe, Hopkinton, Mass. Bids to be opened July 9.

600 to 1000 tons sewage pipe for Milwaukee sewage commission. Bids being received.

400 to 500 tons, water and sewage pipe for Beaver Dam, Wis. Bids July 1.

300 tons, water and sewage pipe for Hinsdale, Ill., sewage disposal plant; general contract

to Pierce, Greeley & Hansen.
260 tons, 12-inch class B, East Bay Municipal Utility district, Oakland, Calif. Bids July 3.
210 tons, 6 to 14-inch class B for West Paterson, N. J. Bids to be opened July 5.
208 tons, 4-inch, class C, improvement Coldwater Canyon road, Los Angeles. Bids opened.
185 tons, 4 to 12-inch class B, improvement of Broadway, Santa Monica, Calif. Bids July 18.
145 tons, 4 to 12-inch class B, improvement, Fifty-fifth street, San Diego, Calif. Bids July 8.
120 tons, pipe and fittings, Brooklyn, N. Y., department of water supply; Walsh Engineering Co. low on general contract.
100 tons, 6 and 8-inch pipe, Salem, Mass. Bids opened July 1.
Unstated tonnage, sewage and water pipe for Kimberly, Wis. Bids July 8.

STEEL PIPE

800 tons, 2-inch pipe in 7-foot lengths for Cleveland; general contract awarded McNichols Co., Chicago.

Tin Plate

Deliveries Are Easier—Operations Reduced Slightly

TIN PLATE PRICES, PAGE 36

Pittsburgh, July 2.—Considerable of the pressure for delivery of tin plate has lifted and producers are well caught up with their obligations. June shipments were smaller than those of May but seasonally heavy. Some independent producers still hold operations at capacity, although the average for the district is only 85 to 90 per cent. Mills are losing occasional turns through warm weather. A shutdown over the coming week-end due to the holiday is expected at several plants. Tin plate continues $5.35 per 100-pound base box, Pittsburgh.

To Sell Barton Plant

Plant, machinery, ground lease, patents, trade name and goodwill of the Barton Steel Co., 3426 South Kedzie avenue, Chicago, is offered for sale by the Chicago Title & Trust Co., subject to approval by the court. The Barton Steel Co. manufactures specialties for steel reinforcement and fabricates steel products. Its plant is on the Chicago drainage canal, and contains a new mill building, warehouse, shop office and various small buildings. The site is 125 x 1400 feet. The mill is of steel and concrete, 98 x 603 feet, containing machinery for rolling rail and billet steel reinforcing bars. The shop building is 55 x 113 feet and the warehouse 87 x 263 feet.

Probes Nonferrous Rates

Washington, July 2.—Interstate commerce commission has announced that beginning Oct. 7, at Chicago, it will take testimony on nonferrous metals in part 12 of Docket No. 17,000. It was in this proceeding that a mileage scale for finished iron and steel rates in official territory was recommended last week. Copper, brass, bronze, lead, zinc, antimony and tin are included.

Columbia Steel Corp., Torrance, Calif., is using about 10,000 tons of scrap monthly.

Sheets

First Half Most Active in History of Majority of Producers—Backlogs Extended During June

SHEET deliveries during June established a new record for the month, and the majority of producers report the first half of the year as the most active in their history. Backlogs were extended during the month. No further slackening is noted in automotive sheets, due mainly to sustained rate of Ford operations. Prices on galvanized sheets are easier.

SHEET PRICES, PAGE 35

Pittsburgh, July 2.—Record June shipments of sheets brought to a close the most active half-year in history. June shipments for the leading interest were the largest on record for that month. Contrary to precedent, backlogs were extended during the 30 days. Shipments of blue annealed are lengthened as far as seven weeks, while delivery on other grades represents three to six weeks' work. Automobile sheets show no further lessening in activity, due partly to continued heavy commitments by Ford. Galvanized sheets are going at 3.60c, Pittsburgh, to some jobbers, with occasional sales of materials not primes at less, although 3.70c still is applied to considerable tonnage. Large buyers are able to obtain a $2 concession from 2.95c, Pittsburgh, on black. Blue annealed is firm at 2.35c and autobody at 4.10c. Operations hold close to 95 per cent, although a letdown is contemplated this week following the Thursday holiday.

New York, July 2.—Sheet specifications keep up well. Galvanized sheets are easy, the range being 3.60c to 3.70c, base, Pittsburgh, subject to the usual $2 differential to distributors. Black sheets are fairly firm at 2.85c to 2.95c. Blue annealed plates continue 2.10c to 2.20c. The lighter gages of blue annealed are firm at 2.35c, for No. 13 gage.

Buffalo, July 2.—Sheet orders continue in satisfactory volume, although not up to the peak of the year. Prices are firm at 3.21c, Buffalo, for black, and 4.365c for full finished. District producers continue to operate at 90 per cent.

Youngstown, O., July 2.—Sheet mills will go down Wednesday night preparatory to observance of the Fourth, and practically all in the valleys will not resume until next Monday.

Orders for all grades continue to flow into local mills. Works making autobody and furniture sheets are under heavy pressure for deliveries and booked to capacity for four to six weeks. So also are a number of the mills making common black sheets. Autobody sheets are firm at 4.10c, Pittsburgh; blue annealed are 2.35c for 13 gage, while common black are bringing 2.95c mainly, though some talk is heard of 2.85c in outlying districts. Makers of galvanized sheets here are not interested in the present market. While 3.50c, Pittsburgh, is heard of in southern competition, and even down to 3.45c, no price under 3.65c is quoted by the few mills still making this grade in this district.

Chicago, July 2.—Galvanized sheet backlogs extend through July, while backlogs for black sheets extend through August. Delivery dates for some blue annealed extend into September. Operations continue at about 80 to 85 per cent. Uses for blue annealed and some sizes of black sheets are increasing, while the reverse has developed for lighter gages. Tonnage of galvanized consumer apparently is lighter than a year ago. Owing to sharp competition for galvanized orders, some mills throughout western territory have shaded quotations, but black and blue annealed prices are reported firm. Chicago delivered prices are 3.10c for No. 24 black, 3.85c for No. 24 galvanized, and 2.50c for No. 13 blue annealed. Blue annealed plates are 2.35c, base, delivered, with mill quotations $1 a ton under delivered prices.

St. Louis, July 2.—Producers of sheets are entering the second half of the year with backlogs larger on the average than at the same period for a number of years. New demand holds up well. Prices are steady.

Cleveland, July 2.—Sheet manufacturers have good backlogs, despite their heavy shipping rates, and the slight curtailment of specifications noted chiefly among automotive users. Prices are firm on spot market tonnages, except for concessions of $2 per ton in black and galvanized.

Philadelphia, July 2.—Sheet prices are firmer, and few exceptions are reported from the following prices: 2.20c, base, Pittsburgh, for No. 10 blue annealed; 2.35c for No. 13 blue annealed; 2.95c for black, and 3.70c for galvanized. The latter is subject to $2 differential on sales to distributors. Specifications show improvement.

Officers recently elected by the Dayton, O., chapter of the American Society for Steel Treating for the coming year are: Chairman, R. R. Kennedy, research department, National Cash Register Co.; vice chairman, L. H. Grenell, metallurgist, Frigidaire Corp.; secretary, Fred M. Reiter, Dayton Power & Light Co.; and treasurer, F. L. Meacham, research department, Frigidaire Corp.

Structural Shapes

Bridge Work Active—Large Units More Numerous—Many Jobs in 2000 to 10,000-Ton Range—Prices Same as Last October

BRIDGES, subways, office buildings, railroad electrification and manufacturing expansion take precedence in structural activity over apartments, schools, hotels, etc. In New York a 6000-ton department store and a 4000-ton telephone building are up. A 5500-ton bridge was let at Kearny, N. J. The Shell Oil Co.'s building at San Francisco, 4500 tons, was let. A 4000-ton bank job was awarded at Toledo, O. One 2500-ton office building at Milwaukee was awarded and one of that size now is up for bids. A subway at Philadelphia will take 2850 tons, and two at New York 18,030 tons. Although the prompt market price on shapes is firm at 1.95c, Pittsburgh, shipments against larger contracts continue to be billed at 1.90c. Equivalent prices rule elsewhere.

STRUCTURAL SHAPE PRICES, PAGE 35

New York, July 2.—Structural awards increased this week and pending tonnage also is larger. Bids are in on projects involving close to 25,000 tons, on which early action is expected. Some drop is noted in demand for tonnage for apartments. American Bridge Co. was low on 4000 tons for catenary towers for the Lackawanna. Bids were reopened on 3900 tons for the additional roadway for the Queensboro bridge and Bersin & Romm Engineering Corp. was low. Mill production slowed up slightly because of repairs and hot weather. Bookings continue close to production capacity. The usual mid-year recession is little in evidence.

Boston, July 2.—Round tonnages were limited throughout the New England district. Small jobs are numerous. The aggregate placed serves to hold fabricators fairly active. About 500 tons are involved in five bridges in Maine for the Bangor & Aroostook railroad, awarded Bethlehem Bridge Co. Less than 600 tons are pending.

Philadelphia, July 2.—Shape demand is active; in fact, current bookings show an increase over several weeks ago. Eastern mills continue to operate practically full. Prices continue equivalent to 1.96c to 2.11c, base, delivered Philadelphia, for standard shapes.

Pittsburgh, July 2.—The structural shape market in this district is more quiet following several large recent awards. About 1400 tons more was awarded in connection with the Pittsburgh & West Virginia railroad extension. A machine shop will require 800 tons. Specifications for plain material last month compared favorably with the May tonnage, as also did shipments. Some contracts have been placed for third quarter with the market generally continuing 1.95c, Pittsburgh. Most 1.90c contracts have been extended, however.

Cleveland, July 2.—A 4000-ton bank job at Toledo, O., was let to American Bridge Co. Numerous jobs, each taking less than 500 tons, are up and larger work is slated for attention early in the fall. A start is being made in ordering out third quarter contract tonnage, some of which was renewed at 1.90c and some booked at 1.95c, Pittsburgh.

Cincinnati, July 2.—The Friars, a Cincinnati athletic club, announces plans for a $400,000 club house, with Crowe & Schulte as architects. Bids have been asked on a $250,000 school building at Batavia, O. Samuel Hannaford & Sons, Cincinnati, are architects.

Chicago, July 2.—One structural steel producer now is making up shape schedules for September rollings. Backlogs extend as much as 10 weeks for plain material. Shortage of semi-finished material and the devotion of structural mill capacity to other requirements, contributed to the present tight position. About 4000 tons of new structural work was placed and a similar tonnage in fresh inquiry has appeared. The 23-story building for the John R. Thompson estate, to be built in the Chicago loop, will proceed at once. A state Supreme Court ruling permits present buildings to be razed. Many structural buyers have closed on their requirements for third quarter. The price range is 2.05c to 2.15c, with comparatively few orders being figured on the 2.15c basis.

CONTRACTS PLACED

5500 tons, highway bridge across Hackensack river, New Jersey to Mt. Vernon Bridge Co.
4500 tons, building, Shell Oil Co., San Francisco to Moore Drydock Co.
4000 tons, building, Ohio Savings & Trust Co., Toledo, O., to American Bridge Co.
2500 tons, office building, Milwaukee Gas Light Co., Milwaukee, Worden-Allen Co.
1400 tons, two viaducts for Pittsburgh & West Virginia railroad extension, to McClintic-Marshall Co.
1400 tons, addition, Prudential Printing Co., Bloomfield, N. J., to Hay Foundry & Iron Works.
1400 tons, building, American Aeronautical Corp., Port Washington, Long Island, N. Y., to Pittsburgh Bridge & Iron Co., instead of 1200 tons, as reported last week.
1000 tons, trainshed, Union Pacific railroad, Omaha, Nebr., to Milwaukee Bridge Co.
1000 tons, building, Curtiss-Caproni Co., Baltimore, to McClintic-Marshall Co.
965 tons, airplane plant addition, Ford Motor Co., Dearborn, Mich., to Whitehead & Kales Co.
937 tons, building, Chevrolet Motor Co., Detroit, to R. C. Mahon Co.
935 tons, pier shed No. 48, San Francisco, to Pacific Coast Engineering Co.
850 tons, Medical-Dental building, Phoenix, Ariz., to McClintic-Marshall Co.
800 tons, machine shop, Aluminum Co. of America, New Kensington, Pa., to McClintic-Marshall Co.
800 tons, for Campaignelle apartment, Buffalo, to Buffalo Structural Steel Co.
700 tons, administration building, State College, Pa., to Anthracite Bridge Co.
700 tons, Warner Bros. theater, Fifty-first street and Seventh avenue, New York, to Harris Structural Steel Co.
700 tons, Bathurst street bridge, Toronto, Ont., to Dominion Bridge Co.
650 tons, five bridges in Maine, Bangor & Aroostook railroad, to Bethlehem Bridge Co.
605 tons, overhead crossing at Barstow, Calif., to unstated interest.
550 tons, chemistry building, Colgate university, Hamilton, N. Y., to Utica Steam Engine & Boiler Works.
500 tons, work for Chicago, Milwaukee, St. Paul & Pacific railroad, to American Bridge Co.
500 tons, building, Thompson-Starrett Co. Inc., Chicago, to American Bridge Co.
500 tons, bridge, Erie railroad, Corning, N. Y. to American Bridge Co.
470 tons, Hoop office building, South avenue, Chicago, to American Bridge Co.
430 tons, building, Proctor & Schwartz, Philadelphia, to Shoemaker Bridge Co.
400 tons, substation, Georgia Power Co., Atlanta, Ga., to Nashville Bridge Co.
400 tons, machine shop addition, Milwaukee Electric Railway & Light Co., Milwaukee, Worden-Allen Co.
400 tons, warehouse, Aluminum Goods Mfg. Co., Two Rivers, Wis., to Worden-Allen Co.
350 tons, bridge on La Cadena street, San Bernardino, Calif., to McClintic-Marshall Co.
350 tons, school, Abington, Pa., to Frank M. Weaver.
350 tons, bridges in Michigan, Pere Marquette railway, to American Bridge Co.
350 tons, garage, East Sixtieth street, New York, to Dreier Iron Works.
350 tons, two New York state higway bridges, to American Bridge Co.
300 tons, truss spans, Rock Island railroad, to Virginia Bridge & Iron Co.
280 tons, cotton mill addition, Opelika, Okla., to Virginia Bridge & Iron Co.
275 tons, New York state highway bridge, to McClintic-Marshall Co.
250 tons, bridge, Chesapeake & Ohio railroad, Miami, O., to Bethlehem Steel Co.
250 tons, additional for Memorial building, University of Minnesota, Minneapolis, to American Bridge Co.
250 tons, bridge, Boston & Maine railroad, Lawrence, Mass., to Boston Bridge Works.
200 tons, work for Union Pacific railroad, to unstated fabricator.
200 tons, locomotive shop, Bucyrus-Erie Co., South Milwaukee, Wis., to Worden-Allen Co.
187 tons, building, Cadillac Motor Car Co., Detroit, to McClintic-Marshall Co.

Awards Compared

	Tons
Awards this week	39,844
Awards last week	27,378
Awards two weeks ago	70,950
Awards this week in 1928	34,197
Average weekly awards, 1928	39,082
Average weekly awards, 1929	42,717
Average weekly awards, June	49,094
Total awards to date, 1928	1,016,745
Total awards to date, 1929	1,153,347

185 tons, bridge, Baltimore & Ohio railroad, Chicago, to McClintic-Marshall Co.

160 tons, County-City building addition, Seattle, to Isaacson Iron Works.

150 tons, hangar, Cleveland airport, to Austin Co. Austin Co., will fabricate the steel itself.

150 tons, hospital, Torrington, Conn., to American Bridge Co.

140 tons, redecking Columbia river bridge, Wenatchee, Wash., to Isaacson Iron Works.

130 tons, garage alterations, Union and Seventh avenue, Brooklyn, N. Y., to Dreier Iron Works.

125 tons, building, National Aniline Chemical Co., Buffalo, to Lackawanna Steel Co.

120 tons, bridge, Hillsburg, Man., to Manitoba Bridge & Iron Works.

120 tons, building, Chicago, Burlington & Quincy railroad, Omaha, Nebr., to Vierling Steel Works.

120 tons, garage and store house, Edison Electric Co., Hyde Park, Boston, to unstated fabricator.

110 tons, Boeing hangar, Seattle, to Isaacson Iron Works.

100 tons, miscellaneous work, including church, Our Lady of Good Counsel, Cleveland, through John Grant & Sons, to Pittsburgh & Iron Co.

CONTRACTS PENDING

9670 tons, subway, route 106, section 6, New York; Dimarce & Reimann low on general contract. Included are 270 tons of bars.

8360 tons, subway, route 107, section 6, New York. Bids July 12. Included are 210 tons of bars.

6000 tons, department store and office building, Fifth avenue and Fifty-eighth street, New York.

5700 tons, hotel, West Fifty-ninth street, New York.

5000 tons, Central Courts building, Brooklyn, N. Y.

4000 tons, building, New York Telephone Co., West Fiftieth street, New York. Bids in.

2850 tons, Ridge avenue subway section, Philadelphia, Bids on general contract, July 19.

2600 tons, New York Central shops, Harmon, N. Y. Bids in.

2500 tons, office building, Northwestern Mutual Life Insurance Co., Milwaukee; bids about July 15; Holabird & Root, Chicago, architects.

1750 tons, Buffalo river bridge, Independent Bridge Co. low bidder.

1725 tons, New York Central viaduct, 251st street, New York. Bids in.

1400 tons, two Pennsylvania railroad bridges across Hackensack river, N. J. Bids to be asked this month.

800 tons, field house, University of Wisconsin, Madison, Wis.; former bids rejected.

700 tons, hangars at Selfridge airport, Detroit. Bids rejected.

700 tons, hotel building, Belleville, Ill.

700 tons, courthouse, Media, Pa.

630 tons, bridge over Salinas river, Sacramento, Calif. Bids received.

600 tons, hotel, East Fifty-first street, New York.

500 tons, three Pennsylvania state highway bridges. Bids in.

465 tons, Christian Science church, Cleveland. Bids in, action expected this week.

400 tons, hospital addition, Port Chester, N. Y. Bids in.

400 tons, Chicago, Burlington & Quincy railroad subway at Omaha, Nebr.

350 tons, St. Francis school, Bronx, N. Y.

350 tons, highway bridge, Lucerne county, Pa.

235 tons, theater, Pottstown, Pa.

225 tons, school, Larchmont, N. Y.

200 tons, building, Reliance Electric & Engineering Co., Ivanhoe road, Cleveland.

200 tons, River street bridge, Boston.

200 tons, Junior high school, East Orange, N. J.

200 tons, Hebrew hospital addition, Brooklyn, N. Y.

200 tons, garage, Bergen Co., Brooklyn, N. Y.

190 tons, two state bridges, Vermont.

175 tons, high school building, Springfield, Mass.

126 tons, bridge over Tujunga wash, Los Angeles, for Pacific Electric Railway Co. Bids being taken.

126 tons, bridge over Los Angeles river, Los Angeles, for Pacific Electric Railway Co. Bids being received.

125 tons, building, Energine Refining & Mfg. Co., Dunham road, Cleveland.

100 tons, building, Cleveland Institute of Aviation, Cleveland. General contract to Gilchrist Construction Co.

Concrete Bars

2550 Tons Let at Tacoma—East Reports Numerous Jobs Let—Chicago Prices Weak

SECOND unit of a dam at Tacoma, Wash., is let, taking 2550 tons of concrete bars. Eight or 10 projects were awarded in the East, requiring 200 tons or more each. Included is the 600-ton government hopital at Somerset Hills, N. J. A New York garage reported placed last week to take 1350 tons, really involves 1500 tons. Concessions in price are noted at Chicago.

REINFORCING BAR PRICES, PAGE 35

Chicago, July 2.—Between 400 and 500 tons in reinforcing bar awards was closed last week. A seasonal lull has developed in fresh projects. Most leading construction engineers are figuring on much work, but a large portion is for autumn. Concessions are made for both billet and rail steel bars. The nominal range for billet bars is 2.40c to 2.90c.

Boston, July 2.—Leading interests in concrete bars and reinforcing steel report little business. Small tonnages, aggregating about 250 tons, comprised the awards last week.

Pittsburgh, July 2.—Shipments of concrete reinforcing bars during June were maintained at about the May rate. Incoming business also compared favorably. Large jobs are lacking and awards, with one exception, involve small tonnages. The market continues 2.30c, Pittsburgh, for cut lengths and 2.00c for stock lengths.

Cleveland, July 12.—Numerous small concrete bar jobs are being let. The 200-ton lot for the parcel post station here for Alva Bradley went to Paterson-Leitch Co. The general contract on the Ohio Savings & Trust Co., Toledo, O., went to A. Bentley & Sons, who have bought the bars, about 60 tons.

CONTRACTS PLACED

2550 tons, Bushman dam project, unit No. 2, Tacoma, Wash., to unstated interest.

1500 tons, New York Central garage, New York, to Jones & Laughlin Steel Corp., through Turner Construction Co. instead of 1350 tons, as reported last week.

600 tons, United States government veterans hospital, Somerset Hills, N. J., to Concrete Engineering Co.

425 tons, building, Sears, Roebuck & Co., Newark, N. J., to Kalman Steel Co.

300 tons, second section of Pennsylvania railroad bridge across Hackensack river, N. J., to Carroll-McCreary & Co. Inc.

300 tons, state highway work, Washington, to Northwest Steel Rolling Mills.

300 tons, Hubbell hotel, Des Moines, Iowa, to Laclede Steel Co.

250 tons, building at Bloomfield, N. J., for Westinghouse Electric & Mfg. Co., to Truscon Steel Co.

250 tons, road work between Matawan and Holmdell, N. J., to Igoe Bros., through Jannarone Contracting Co., Belleville, N. J.

225 tons, building, Whitehall Cement Mfg. Co., Cementon, Pa., to Jones & Laughlin Steel Corp., through Turner Construction Co.

200 tons, subway section 101, route 1, New York, to McClintic-Marshall Co., through Mason & Hangar Inc.

200 tons, city bridge, 222nd street, New York, to Fireproof Products Co.

200 tons, parcel post station, Alva Bradley, Cleveland, to Paterson, Leitch Co.

200 tons, work for Chicago, Milwaukee, St. Paul & Pacific railroad, to unstated fabricator.

156 tons, paving in San Diego county, Sacramento, Calif., to unstated interest.

150 tons, substructure, Cedar street bridge, Peoria, Ill., to Kalman Steel Co.

150 tons, apartment house, Seattle, and Olympia school, to Northwest Steel Rolling Mills.

140 tons, apartment, South Orange street, Glendale, Calif., to unstated interest.

125 tons, building, New York Steam Corp., New York, to Kalman Steel Co.

100 tons, women's ward state penitentiary, Walla Walla, Wash., to Northwest Steel Rolling mills.

CONTRACTS PENDING

500 tons, apartment, 1100 North Dearborn street, Chicago; McNally & Quinn, architects.

256 tons, bridge over Salinas river, Sacramento, Calif. Bids received.

208 tons, paving in Alameda county, Sacramento, Calif. Bids July 17.

200 tons, state highway bridge across Raritan river, N. J., general contract to Edward H. Ellis.

190 tons, bridge across coal pockets for Delaware, Lackawanna & Western railroad, South Brooklyn, N. Y.

150 tons, sixth section of Bronx Concourse subway, New York, general contract to DiMarco & Reimann.

133 tons, paving in Madera county, Sacramento, Calif. Bids received.

120 tons, two bridges in Sacramento county, Sacramento, Calif. Bids received.

Awards Compared

	Tons
Awards this week	6,971
*Award last week	7,774
Awards two weeks ago	4,646
Awards this week in 1928	4,215
Average weekly awards, 1928	6,189
Average weekly awards, 1929	6,508
Average weekly awards, June	5,527
Total awards to date, 1928	194,793
Total awards to date, 1929	175,723

*Revised

New York Fights Rates

Washington, July 2.—Interstate commerce commission will hear argument here beginning July 15 on opposition of various interests in New York, including the New York Central railroad, against the recommendation of the commissioner's examiner regarding port differentials in the eastern class rate investigation.

Rates up to 10 cents per 100 pounds to or from Philadelphia and up to 23 cents per 100 pounds to or

from Baltimore, lower than to or from New York have been proposed. New York's supremacy as the greatest American port would be endangered, it is claimed in a protesting brief filed by the New York Central railroad.

Furniture Orders Low

Washington, July 2.—May orders and shipments for steel furniture were lower than any month this year, according to the department of commerce. Monthly comparisons follow:

	Business Group		Shelving	
	Orders received	Shipments	Orders received	Shipments
	(In Dollars)			
1928				
May	3,085,638	3,213,291	732,921	768,988
Total, 5 mo.	15,828,337	15,069,469	3,824,735	3,678,962
June	2,764,085	3,009,229	727,060	720,253
July	2,594,216	2,515,482	713,330	722,516
Aug.	2,619,284	2,564,638	863,422	836,105
Sept.	2,689,009	2,754,135	799,850	678,422
Oct.	3,192,927	3,158,998	958,726	953,804
Nov.	2,675,664	2,854,312	875,354	915,640
Dec.	3,610,645	3,117,139	828,555	791,376
Total, 1928	35,974,117	35,043,412	9,601,032	9,297,078
Jan.	3,892,651	3,614,961	1,099,575	901,970
Feb.	3,060,290	3,242,581	919,557	974,305
March	2,883,716	2,923,363	1,145,632	1,109,876
April	2,880,395	2,844,938	1,095,329	1,131,362
May	2,845,826	2,791,306	1,127,431	990,651
Total 5 mo.	15,562,878	15,417,149	5,387,524	5,108,164

Iron Ore

Shipments Establish New Record for June and First Half

IRON ORE PRICES, PAGE 36

Cleveland, July 2.—Lake Superior iron ore producers report there is no buying at this time, but shipments are heavy. June vessel shipments amounted to 10,174,424 tons, a new record for the month. The previous high was in 1918, with 9,921,000 tons. The increase over June, 1928, was 1,248,208 tons. New records have been established successively for April, May and June this year. The total to July 1, 1929, is 22,239,938 tons, against the previous record for the comparable period in 1916, with 19,615,567 tons. The period this year to July 1 shows an increase of 7,944,813 tons over 1918. The Lake Superior Iron Ore association reports details for the movement to July 1, as follows:

Port and Dock	Tons
ESCANABA:	
C. & N. W.	1,562,552
C. M. & St. P.	580,699
MARQUETTE:	
D. S. S. & A.	277,108
L. S. & I.	1,350,886
ASHLAND:	
C. & N. W.	1,845,075
Soo Line	952,874
SUPERIOR:	
Great Northern	5,737,777
Soo Line	444,985
Northern Pacific	245,282
DULUTH:	
D. M. & N.	6,945,315
TWO HARBORS:	
D. & I. R.	2,297,385
TOTAL	22,239,938

Rails, Cars

Pennsylvania Divides 4000-Car Body Order—More Secondary Rail Tonnage Closed

FIRST half car awards undoubtedly will exceed 60,000. Pennsylvania's award of 4000 car bodies and 105 miscellaneous cars is confirmed. Chicago & Eastern Illinois buys 3500 tons of rails at Chicago and Norfolk & Western 39,000 tons. Other secondary rail tonnage is under negotiation. Track fastening business is well sustained. Northern Pacific inquires for 11 locomotives.

RAILROAD TRACK PRICES, PAGE 36

Chicago, July 2.—Sales of about 6000 tons of track material, including 3500 tons of rails for the Chicago & Eastern Illinois, are reported for last week. Track fastenings sales alone amounted to 3000 tons. About 6000 tons is on inquiry, including some export tonnage. From 10,000 to 15,000 tons of secondary rail tonnage is being negotiated. Included are tonnages for Rock Island and Chicago, Milwaukee, St. Paul & Pacific. Rail mill operations continue at 85 per cent.

Specifications on finished steel from the car shops are submitted steadily. Mill orders from that source, however, are lighter than 30 days ago, since so much material for recent car orders has been assembled by the car shops.

New York, July 2.—Pennsylvania railroad, which recently closed on 4000 box car bodies, has placed orders for 105 additional miscellaneous cars, of which 75 will be built in the company's own shops. Buying generally the past few days has been spotty, with little outstanding inquiry. A preliminary estimate as to June car awards, makes the total 9600.

Revised figures place the total domestic freight car awards for May at 7562, bringing the aggregate for the first five months up to 56,890. Awards for June will make the first half total measurably exceed 60,000 cars. Norfolk & Western railroad distributed 39,000 tons of rails among Steel corporation subsidiaries and Bethlehem Steel Co.

Pittsburgh, July 2.—Norfolk & Western railroad is expected to inquire shortly for fastenings to accompany its recent rail order. Business in track fastenings shows less than the usual slump at this time of the year. Producers are faced with a good volume for the present month. Light rails continue quiet.

District car builders shared to the extent of 1600 of the recent 4000-car order placed by Pennsylvania.

Philadelphia, July 2.—Pennsylvania railroad opens bids on Friday next on 2,100,000 pounds of spikes, 300 tons of blue annealed, 200 tons of black and 100 tons of galvanized sheets, and 340 tons of pipe.

Toronto, Ont., July 2.—It is officially announced that Algoma Steel Corp., Sault Ste. Marie, Ont., has received a subtantial rail order from the Canadian Pacific, which will assure operation of the rail mill on double shift for an indefinite period.

CAR ORDERS PLACED

Braden Copper Co., three narrow gage tank cars to General American Tank Car Corp.
Buffalo & Susquehanna, 200 steel hoppers to Pressed Steel Car Co.
Carnegie Steel Co., 22 gondola car bodies, to Greenville Steel Car Co.
Central Maine Power Co., six dump cars to Koppel Industrial Car & Equipment Co.
Chicago, North Shore & Milwaukee, 25 interurban cars to Standard Steel Car Co.
Federal Enameling & Stamping Co., three air dump cars, to Koppel Industrial Car & Equipment Co.
Lehigh Coal & Navigation Co., seven air dump cars, to Western Wheeled Scraper Co.
New York Central, four baggage cars to American Car & Foundry Co.
Pennsylvania, 4000 steel box car bodies, previously noted as reported placed, distributed as follows: 1000 bodies to Pressed Steel Car Co., 900 to American Car & Foundry Co., 800 Ralston Steel Car Co., 700 Pullman Car & Mfg. Corp. and 600 Standard Steel Car Co. Also 50 caboose cars and 25 horse express cars to its own shops at Altoona, Pa., and 30 air dump cars to Koppel Industrial Car & Equipment Co.
Seaboard Air Line, 300 opper bodies to Standard Steel Car Co., for conversion of gondola cars.
Van Camp Sand & Gravel Co., two air dump cars to Koppel Industrial Car & Equipment Co.

LOCOMOTIVE ORDERS PLACED

Canadian National, oil electric switch engine, to Canadian Locomotive Co., Westinghouse Electric & Mfg. Co. and Canadian Westinghouse Co.

CAR ORDERS PENDING

Brooklyn & Manhattan Transit Co., 300 subway cars; formal inquiry expected shortly.
Delaware, Lackawanna & Western, 1000 steel underframe box cars and 250 steel hoppers.
Detroit, Toledo & Ironton, three oil-electric rail motor cars.
Erie, five gasoline-electric rail motor cars.
General Chemical Co., 21 tank car tanks and 15 tank cars.
Reading, 200 steel gondolas.

LOCOMOTIVE ORDERS PENDING

Northern Pacific, 11 Mallet type locomotives.

Sheet Wages Rise

The bimonthly examination of sheet and tin mill prices shows sales setting a rate of $3.05 per 100 pounds, making wages 27 per cent over base, or an advance of 1½ per cent.

New England Power Co. reported an increase of 19 per cent over May, 1928, and 58 per cent over May, 1927, in electrical output.

Strip

Heavy Business Continues but Below Spring Peak—Auto Slackening Is Being Felt

AUTOMOTIVE slackening is being felt in strip mills and specifications have declined somewhat, though some builders continue at previous rates. Backlogs still are sufficient to require three to six weeks for delivery. Third quarter contracting is practically completed and prices remain steady at the established level of 1.90c to 2.00c, Pittsburgh.

STRIP PRICES, PAGE 36

Pittsburgh, July 2.—Incoming business and shipments of strip steel show little change from the steady rate of several weeks. June business compared favorably with May, although there was a slight letdown in shipments due to lifting the pressure of previous months. The automotive industry has markedly curtailed strip requirements and only a few interests are taking tonnage in the volume common during the spring. Backlogs have been worked off until shipments of two to three weeks can be effected on some sizes of hot strip, although on other widths delivery is extended as far as six weeks. Third quarter contracting is practically completed with the current market at 1.90c to 2.00c, Pittsburgh, for the two sizes of hot strip and 2.75c to 2.85c for cold-rolled strip.

Philadelphia, July 2.—Strip specifications continue active, and mills are booked well ahead. Prices are firm.

Cleveland, July 2.—The strip steel situation is spotty as to demand and mill backlogs. One maker is able to deliver wide hot strip in two to three weeks; another is filled up for eight to 10 weeks. The positions of these two mills are reversed on narrow sizes. Consumption by the automotive trade has been shrinking for a few weeks but the outlook is that automobile manufacturers generally will start fall programs earlier than usual; some tonnage is promised for later this month. No price interference is encountered.

Chicago, July 2.—Cold-rolled strip mills are feeling the declines in requirements for automotive steel, but backlogs are five to six weeks. Operations are about 70 per cent. Third quarter contracting is virtually completed, prices being on the basis of 2.75c to 2.85c, Pittsburgh-Cleveland. Hot-rolled strip mills are operating at 75 to 80 per cent on a diversification of business. More semifinished steel has been purchased from the East by hot-rolled strip interests.

Robert Dutton Resigns

Robert S. Dutton, manager of sales for Pickands, Brown & Co., merchant pig iron and coke sellers, Chicago, has resigned after 35 years' service with the company and over 15 as manager of sales. Mr. Dutton, a native of Pittsfield, Mass., began his career with the Globe Tack Co., Boston, and at one time was with the Illinois Steel Co., Chicago.

Mr. Dutton is succeeded by Snelling S. Robinson, with Pickands, Brown & Co. since last October and previously district sales manager at Erie, Pa., for Pickands, Mather & Co., Cleveland.

Germany produces about 87 per cent of the world's fuel briquets.

Cold Finished Steel

Third Quarter Contracting Practically Completed—Decrease Slight

COLD FINISHED PRICES, PAGE 36

Pittsburgh, July 2.—June brought some decrease in shipments and specifications for cold-finished steel bars, although only seasonal. Second quarter contracts generally were well specified and third quarter contracting is practically completed. The market continues to show a firm price tone, with 2.30c, Pittsburgh, well observed.

Bulletin Is Revised

A bulletin has been issued by the International Nickel Co. Inc., 67 Wall street, New York, describing revised working processes of welding, brazing and soldering monel metal and pure nickel. It offers a comprehensive treatise covering a variety of means of uniting these two classes of alloys.

Wire

New Records Set in Production for First Half—Manufacturing Needs Are Heavy

SHIPMENTS in first half exceeded those of last year's initial period and except for nails the total was the heaviest for any peacetime half. Demand for manufacturing purposes continues heavy and mills are operating at an unusually high rate. Contracts for third quarter have been practically covered and prices are steady at the established level.

WIRE PRICES, PAGE 36

Chicago, July 2.—June and first half shipments of wire products exceeded those of last year. Except nails, wire products marketed during first half were the heaviest in any peace-time year in this territory. More buying of woven fencing is expected this summer and early autumn. Manufacturers' and merchants' wire leads in activity and has declined only slightly. Third quarter contracting is nearly completed. Operations are slightly lower, at about 70 per cent. Jobber quotations for bright plain wire are 2.55c, Chicago or western mills.

Worcester, Mass., July 2.—Wire volume is satisfactory under demand that so far has shown no weaknesses. Prices are being maintained on a firm basis of 2.75c, Worcester base, for plain bright wire to dealers.

New York, July 2.—Demand for plain steel wire for manufacturing purposes continues heavy. The demand is highly unusual for midsummer. The price continues firm at 2.50c, base, Pittsburgh. It is estimated that wire mills are operating at 70 to 75 per cent, the best in recent years. Demand for nails continues to lag. The market on nails continues $2.75, base, Pittsburgh, subject to the usual differential.

Pittsburgh, July 2.—Incoming business in wire and wire products spurted during the past week due to the advent of the new month and quarter. Such business in some cases represented extended requirements of purchasers. June proved an active month, with specifications and shipments well up to the rates of May and June, 1928. Decrease in wire demand from automotive interests is slight in the aggregate although buying has dropped in some directions. Manufacturers' wire proved the most active item in June, fencing material and wire nails slumping. Practically all third quarter contracts have been signed with the current market of 2.50c to 2.60c, Pittsburgh, for plain wire and $2.65 to $2.75 for wire nails generally well observed.

Cleveland, July 2.—Sustained demand for wire comes mainly from wire products maufacturers. Tonnage mainly is going to nut, bolt and rivet producers. Nails are quiet, country trade being fully supplied, except for an occasional mixed carload. Prices in this immediate vicinity on nails and wire are firm.

Nonferrous Metals

Sales of Brass and Copper Products Fairly Active—Pig Lead in Demand—Shipments Continue Unusually Large

Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Straits Tin New York Spot	Straits Tin New York Futures	Lead New York	Lead East St. Louis	Zinc St. Louis	98-99% Aluminum	Spot Antimony	Ingot Nickel
June 26	18.00	18.07½	17.37½	44.40	45.10	7.00	6.80	6.70	23.90	8.65	35.00
June 27	18.00	18.07½	17.37½	44.50	45.12½	7.00	6.80	6.70	23.90	8.65	35.00
June 28	18.00	18.07½	17.37½	44.50	45.12½	7.00	6.80	6.70	23.90	8.65	35.00
July 1	18.00	18.07½	17.37½	44.55	45.25	7.00	6.80	6.70	23.90	8.62½	35.00
July 2	18.00	18.07½	17.37½	44.62½	45.50	7.00	6.80	6.70	23.90	8.62½	35.00

NEW YORK, July 2.—Brass and copper mill product and pig lead buying has been fairly active in the past week, but other departments of the metal markets have been quiet. All prices have been steady. Shipments continue to be unusually large for this season. Weak markets in London lately have discouraged, somewhat, active buying here.

Copper—The domestic market has been extremely quiet but firm except for slight shading in the outside market. Export sales have been of fair size and have kept custom smelters well satisfied. Other producers still are out of the market, having good domestic business on their books for July shipments. Total export business on the books for shipments this month is light, and as business lagged last month, it is expected that buying soon will become larger.

Zinc—Prime western is quoted at 6.70c, East St. Louis, by a few smelters. Most other smelters continue to hold for 6.80c, East St. Louis, and now and then report a sale. Business at any price in the past week was extremely light. Zinc ore is unchanged at $44 a ton.

Tin—Buying by users has been light, but this is natural in view of active buying done recently. The market has been fairly steady at a shade under recent top prices. The world visible supply was cut 1014 tons last month to a total of 23,715 tons, but stocks in this country increased 356 tons. Domestic deliveries in the first half of the year were a new record.

Lead—Prices have been steady despite reports of price-cutting on some second hand metal and easiness in London. Buying has been fair.

Aluminum—Prices continue unchanged.—*Daily Metal Trade.*

Coke By-Products

Benzol Moves Well in Export—Phenol In Good Demand

New York, July 2.—Prices for light oil distillates remain firm and unchanged. Production is steady. Current demands for early consumption keep the market cleared of surplus.

Export trade in benzol is fairly brisk. Spot business in benzol also is active, while contract quotas are moving in good volume. While some lull in tuluol had been expected as a result of decline in automobile production, the falling off has not yet been pronounced and has been offset by other outlets.

Solvent naphtha and commercial xylol markets show little change, with demand keeping pace with production.

Demand for phenol continues heavy, especially from bakelite manufacturers. There are few sizable lots available in the market and in spots a temporary shortage may exist.

While naphthalene flakes are quoted 0.05½c to 0.06½c per pound at producers' plants, most business is at the lower figure. Sulphate of ammonia is commanding slightly more interest from fertilizer interests, but little new season contracting has developed.

Mill Products

Base price cents per pound f.o.b. mill, except where otherwise specified

SHEETS	
Yellow brass (high)	23.25
Copper, hot rolled	27.75
Lead, full sheets (cut ¼c more)	10.00
Zinc sheet (100-pound base)	$10.25
Zinc strip (100-pound base)	$9.25
Aluminum, flat sheets, up to 10 gage, 3 to 72 inches wide	31.30
SEAMLESS TUBE	
Yellow brass (high)	28.25
Copper	29.25
RODS	
Yellow brass (high, full turnings)	21.25
Naval brass	24.00
WIRE	
Copper	19.87½
Yellow brass (high)	23.75

Old Metals

Dealers' buying prices, cents per pound

HEAVY RED BRASS	
New York	12.00 to 12.50
Chicago	11.50
Cleveland	12.25 to 12.50
HEAVY YELLOW BRASS	
Cleveland	8.75 to 9.00
ZINC	
New York	3.25 to 3.50
Cleveland	3.25 to 3.50
HEAVY COPPER AND WIRE	
New York	14.25 to 14.50
Boston	13.50 to 14.00
Chicago	12.50
Cleveland	13.50 to 14.00
RED BRASS BORINGS	
New York	11.00 to 11.50
YELLOW BRASS TUBING	
Cleveland	8.50 to 9.00
LIGHT COPPER	
New York	12.25 to 12.50
Chicago	11.50
Cleveland	12.50 to 13.00
LIGHT BRASS	
Boston	6.75 to 7.25
Chicago	7.50
Cleveland	6.75 to 7.00
ALUMINUM	
Clippings, Cleveland	18.00 to 18.25
Borings, Cleveland	9.50 to 10.00
Cast, Cleveland	12.50 to 12.75
Cast, Boston	10.00 to 10.50

Secondary Metals

Remelt aluminum No. 12	17.00 to 17.50
Brass ingot, 85-5-5-5	16.25 to 16.50

Coke Oven By-Products

Per Gallon at Producers' Plant in Tank Lots

	Spot
Pure Benzol	$0.23
90 per cent benzol	0.23
Toluol	0.40
Solvent naphtha	0.30
Commercial xylol	0.30
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.16 to 0.17
Per Pound at Producers' Plants	
Naphthalene flakes	0.05½ to 0.06½
Naphthalene balls	0.06½ to 0.07½
Per 100 Pounds Delivered	
Sulphate of ammonia	$2.20 to 2.25

D. T. & I. to Pennsylvania?

Detroit, July 2.—The Pennsylvania railroad is expected to be the ultimate purchaser of the Detroit, Toledo & Ironton railroad sold by Henry Ford to Charles D. Barney & Co., New York, acting for an undisclosed client. The railroad was purchased by Mr. Ford in 1920 and has been an important factor in the shipment of steel to the Detroit district in that routings were arranged to give the longest possible haul to the Ford railroad.

Truck Tires Standardized

Washington, July 2.—The bureau of standards, department of commerce, is distributing a report of the general conference on simplification of industrial truck tires, held in Washington, June 6 The program is to become effective Sept. 1, 1929, subject to modification annually.

Quicksilver Is Easy

New York, July 2.—Quicksilver is easy at $120 to $122.50 a flask. Business is dull.

Warehouse

Seasonal Slump Noted Some Sections—St. Louis Reports Pickup—Distribution Good in East—Prices Are Unchanged

WHILE in some sections a seasonal letdown is apparent in warehouse business, in others, tonnage is mounting. A strike settlement at St. Louis, for instance, stimulates demand for materials for outside work. In most sections first half tonnage exceeded last half of last year and in some, the first half of 1928 as well as 1927. Prevailing prices largely are unchanged.

Philadelphia—Daily average sales by jobbers in June was fully as large as in May. Some report an increased tonnage for June. Prices are firm and unchanged.

Buffalo—Warehouses completed a first half which exceeded the last half of 1928 by a fair margin and ran far ahead of the first half of 1927. Third quarter prospect is regarded as good. Mails show broad distribution of materials. Prices are steady and unchanged.

Pittsburgh—June warehouse sales, slightly below May, were still seasonally heavy. Activity continues well distributed. Nails move slowly and while sheet demand is lighter, roofing material is fairly actice. Prices are steady. Current quotations continue during the third quarter.

Cincinnati—Jobbers' sales in June dropped below May volume, largely because of a tapering off in outside work. Prices continue firm. The bulk of current demand is for bars, with plates and shapes showing fairly well.

Cleveland—Demand for iron and steel products out of warehouse continues fairly heavy. A tapering off in orders developed the past few days, but June business was fully up to that of the preceding month. Blue annealed sheets now are based at 3.25c for 10 gage. Other gages command extras from that base: 12, 3.35c; 14, 3.45c; and 16, 3.55c. Formerly these were 3.30c, 3.35c and 3.45c, respectively. Otherwise prevailing prices are firm and unchanged.

St. Louis—Settlement of the building crafts strike, under way since May 1, has released considerable business to the warehouses. Specifications on building materials have increased and new orders and inquiries have appeared. Generally, however, the jobbing trade continues spotty. Prices remain the same.

Seattle—Bars have been raised from 3.00c to 3.15c, when sold from warehouse. At Portland, Oreg., the price remains 3.00c.

Warehouse Quotations in Cents Per Pound at Leading Market Centers

STEEL BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.00c
Ft. Worth	3.75c
Houston	3.00c
Los Angeles	3.30c
New York †††‡	3.25c
Philadelphia*	2.80c
Pittsburgh	2.90c
Portland	3.00c
San Francisco	3.15c
Seattle	3.15c
St. Louis	3.15c
St. Paul	3.25c
Tulsa	3.75c to 4.04c

IRON BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Detroit	3.00c
Ft. Worth	3.75c
New York††	2.80c to 3.24c
Philadelphia*	2.80c
St. Louis	3.15c
Tulsa	3.75c to 4.04c

REINFORCING BARS

Baltimore	3.31c
Boston	3.265c to 3.50c
Buffalo	2.95c
Cincinnati	3.15c
Cleveland	2.25c to 2.44c
Detroit	2.30c to 3.00c
Ft. Worth	3.50c
Houston	3.00c
Los Angeles cl.	2.65c
Los Angeles, lcl.	3.00c
New York	2.90c to 3.30c
Philadelphia	2.75c to 3.10c
Pittsburgh	2.90c to 3.175c
San Francisco cl.	2.00c
San Francisco lcl.	2.25c
Seattle	3.00c
St. Louis	3.15c
Tulsa	3.75c to 4.00c
Youngstown	2.30c to 2.60c

STRUCTURAL SHAPES

Baltimore	3.25c
Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland	3.00c
Detroit	3.10c
Ft. Worth	4.00c
Houston	3.25c
Los Angeles	3.30c
New York †††‡	3.25c to 3.30c
Philadelphia*	2.70c
Pittsburgh	3.00c
Portland	3.00c
San Francisco	3.15c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	3.75c to 4.14c

PLATES

Baltimore	3.25c
Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland, ¼-in. and thicker	3.00c
Cleve., 3/16-in.	3.20c
Detroit	3.10c
Detroit, 3/16-in.	3.30c
Ft. Worth	4.00c
Houston	3.00c
Los Angeles	3.30c
New York‡‡	3.30c
Philadelphia*	2.70c
Pittsburgh	3.00c
Portland	3.00c
San Francisco	3.15c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	3.75c to 4.14c

NO. 10 BLUE ANNEALED

Baltimore	3.60c
Boston 3/16-in.	3.915c
Buffalo	3.50c
Chicago	3.35c
Cincinnati	3.45c
Cleveland	3.25c
Detroit	3.35c
Ft. Worth	3.50c
Houston	3.90c
Los Angeles	4.00c
New York‡‡	3.70c to 3.90c
Portland	3.75c
Philadelphia*†	3.25c
Pittsburgh**	3.35c to 3.45c
San Francisco	3.80c
Seattle	4.00c
St. Louis	3.45c
St. Paul	3.75c
Tulsa	4.20c to 4.34c

NO. 24 BLACK SHEETS

Baltimore*†	3.75c
Boston	4.85c
Buffalo	4.20c
Chicago	4.05c
Cincinnati	4.05c
Cleveland***	3.75c to 3.90c
Detroit	3.95c
Ft. Worth	4.70c
Los Angeles	4.90c
New York	4.00c
Philadelphia*†	4.10c
Pittsburgh**	3.85c
Portland	4.90c
San Francisco	4.90c
Seattle	5.00c
St. Louis	4.25c
St. Paul	3.89c
Tulsa	4.34c

NO. 24 GALVANIZED SHEETS

Baltimore*†	4.50c
Boston	5.60c
Buffalo	4.70c to 4.85c
Chicago	4.90c
Cincinnati	4.90c
Cleveland***	4.60c to 4.75c
Detroit	4.75c
Ft. Worth	5.50c
Houston	5.30c
Los Angeles	5.30c
New York	4.75c
Philadelphia*†	4.85c
Pittsburgh**	4.85c to 4.95c
Portland	5.50c
San Francisco	5.30c
Seattle	5.50c
St. Louis	5.10c
St. Paul	4.68c
Tulsa	5.10c to 5.35c

BANDS

Baltimore	4.00c
Boston	4.015c to 5.00c
Buffalo	3.65c
Chicago	3.20c
Cincinnati	3.50c
Cleveland	3.25c to 3.65c
Detroit, 3/16-in. and lighter	3.30c
Ft. Worth	4.25c
Houston	3.65c
Los Angeles	4.15c
New York‡‡	3.75c
Philadelphia*	3.30c
Pittsburgh	3.25c
Portland	4.00c
San Francisco	3.75c
Seattle	4.00c
St. Paul	3.50c
Tulsa	4.50c to 4.69c

HOOPS

Baltimore	4.00c
Boston	5.50c to 6.00c
Buffalo	4.05c
Chicago	3.75c
Cincinnati	4.05c
Cleveland	3.25c to 3.65c
Detroit, No. 14 and lighter	3.80c
New York‡‡	4.25c
Philadelphia*	3.55c
Pittsburgh	4.25c
Seattle	5.00c
St. Paul	4.00c

COLD FINISHED STEEL

	Rounds, hexagons,	Flats, squares
Baltimore (c)	3.50c	(a) 4.00c
Boston	3.55c	4.05c
Buffalo	3.95c	4.45c
Chicago	3.60c	4.10c
Cincinnati	3.85c	4.35c
Cleveland	3.65c	4.15c
Detroit	3.85c	4.35c
Los Angeles (a)	4.50c	.....
New York	3.60c	4.10c
Philadelphia*	3.60c	4.10c
Pittsburgh	3.70c	4.20c
Portland (a)	4.50c	.....
San Fran. (a)	4.25c	.....
Seattle (a)	5.00c	.....
St. Paul (a)	3.85c	.....
Tulsa	4.64c	5.14c

(a) Rounds only.

COLD ROLLED STRIP

Boston, 0.100-inch, 500 pound lots	5.30c
Buffalo	5.85c
Chicago (b)	6.10c
Cincinnati	7.15c
Cleveland (b)	5.95c
Detroit	5.80c
New York	5.15c
Philadelphia (c)	5.15c

(b) Net base, straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.

SWEDISH IRON AND STEEL
New York duty paid

Hollow drill steel	13.00c
Iron bars, round	6.10c
Iron bars, flats and squares	6.50c

*Plus quantity differentials. ‡‡Minus quantity differentials. ††Domestic bars. **Less than 25 sheets. *† 50 or more bundles. ***Less 0.15c where more than 10 bundles are ordered at once for delivery at one time.

Pacific Coast

Half-Year Tonnage Above Total a Year Ago—Prices Are Steady

TOTALS of steel tonnage placed to the close of June show an increase over the same period of 1928 except in concrete bars. Pending projects promise continuance of demand for later months. Small lots of coke and pig iron are being imported. Seattle warehouse prices are advanced to California levels. Tank building by oil producers aids plate market.

San Francisco, June 29.—(*By Air Mail*)—Demand for iron and steel products on the Pacific coast continues well sustained and at the present rate consumption for the year will greatly exceed the total for former years. Among the awards of the week were 4500 tons for the Shell Oil building in San Francisco, more than 33,000 tons of rails by the Southern Pacific Co. and a number of oil storage tanks, requiring 5500 tons of plates, by the Texas Oil Co., Los Angeles. The price structure continues steady and little shading is being met.

Pig Iron and Coke

Foundry activity is improving and inquiries are more numerous. One importer is unloading part of a 5000-ton cargo of English coke in Los Angeles, the balance to be later unloaded in San Francisco. Practically all of this tonnage will be applied against contracts placed more than a month ago. English by-product coke is being quoted at $12.50 to $13.50 a net ton, delivered incoming dock. English beehive material is quoted at $16 to $17 a ton. No change in pig iron prices are noted.

Coast Pig Iron Prices

Utah basic	$25.00 to 26.00
Utah foundry	25.00 to 26.00
*German	24.25
*Indian	25.00 to 26.00

*C.i.f. duty paid.

Bars, Plates and Shapes

Demand for concrete bars is holding up well and awards this week were the heaviest in over three months, totaling 3043 tons. For the first half of this year 40,619 tons were placed compared with 49,176 tons for the corresponding period in 1928. Awards included 140 tons for an apartment in Glendale, Calif. Several California state highway projects call for more than 1100 tons, the largest involving 416 tons for a bridge in Tehama county. Out-of-stock prices in the San Francisco district continue unchanged at 2.30c, base, on carload lots and 2.60c on smaller lots. Los Angeles prices are $2 a ton higher. On mild steel bars quotations continue firm at 2.35c c.i.f.

Western Pipe & Steel Co. secured fifteen 118,000-barrel tanks, involving 5370 tons, for Texas Oil Co., Los Angeles. This makes a total of 21 tanks placed by this company the past week or two. Pacific Gas & Electric Co. awarded two 200,000-cubic foot and one 100,000-cubic foot gas holders to Western Pipe & Steel Co., calling for 400 tons. Awards for the first half of 1929 totaled 74,950 tons, compared with 16,386 tons for the same period last year. Prices are firm at 2.35c, c.i.f.

Structural shape awards this week were the heaviest in nearly two months and aggregated 7084 tons, bringing the total for first half to 112,175 tons, compared with 78,337 tons for the corresponding period a year ago. Awards this week included 4500 tons for the Shell Oil building, San Francisco, booked by the Moore Drydock Co., 850 tons for a medical building in Phoenix and 350 tons for a bridge at San Bernardino, both taken by McClintic-Marshall Co. Contracts were also placed for 605 tons for a bridge at Barstow, Calif., and on a viaduct in Tacoma requiring 576 tons. Bids were opened on 1100 tons for an apartment in San Francisco and the Pacific Electric Railway, Los Angeles, is asking figures on 252 tons for two bridges. No change in prices on plain material is noted, 2.35c c.i.f. continuing firm.

Other Finished Material

During first half 50,080 tons of cast iron pipe were awarded, compared with 44,601 tons for the same period in 1928. Grinnell Co. was low bidder on 1148 tons of 24-inch pipe and the United States Pipe & Foundry Co. on 1425 tons of 8-inch pipe for Los Angeles. New inquiries include 260 tons of 12-inch pipe for the East Bay municipal utility district, Oakland, and 145 and 185 tons respectively for San Diego and Santa Monica, Calif.

The Southern Pacific Co., San Francisco, placed with unnamed interests 33,764 tons of 90 to 130 pound tee rails.

Seattle Prices Advance

Seattle, June 26.—Wholesale jobbers in the Pacific Northwest report business holding up well. Mill representatives state that the mid-summer dull season is apparent and orders are mostly in car lots. Foundry operations are slack but fabricating plants are well supplied with work.

Prices of iron and steel products are holding firm. This week jobbing schedules on bars, plates and shapes were raised 15c, applying only to Seattle territory, but placing this district on a closer par with the primary California markets, San Francisco and Los Angeles.

Structural and reinforcing steel awards this week in the Seattle district totaled about 1000 tons. Several tonnages of plates are to be placed soon.

Boeing Airplane Co. received a contract to build 90 pursuit ships for the government at a cost of $1,250,000. This is the second largest contract for air machines awarded by the United States since the war. The Boeing company is now the largest employer of labor in Seattle.

Pig Iron and Coke

Buying of pig iron and coke is limited especially since quick deliveries of small tonnages can easily be made. Plants in this district have purchased 200 to 300 tons of Burn India iron at $25.75. Orders have also been placed for about 400 tons of Tyneside coke, in lots of 100 tons, on a price basis of $13.25, in the expectation that this grade of coke will advance at least $1 in line with Victoria, which is now quoted at $14.50.

Bars, Plates and Shapes

Local steel mills are operating steadily with a fair tonnage on books, much of it in car lots. Mill price of merchant bars is unchanged at 2.35c and reinforcing at 2.30c. Northwest Steel Rolling Mills this week booked 550 tons of reinforcing as follows: 300 tons for state highway work; 150 tons for a local apartment and a school at Olympia: 100 tons for the women's ward at the state penitentiary. L. C. Dioguardi, San Mateo, Calif., has the general contract at $210,950 for the American Lake hospital, involving 125 tons of reinforcing. Addition to the normal school at Ellensburg, 200 tons, is also pending. Oregon highway commission is planning a concrete bridge over the Rogue river to cost $650,000.

Bids were opened at Vancouver, B. C., yesterday for 76,850 feet of 26-inch to 36-inch riveted or welded steel pipe, involving approximately 5000 tons of plates. Only British Columbia firms submitted tenders which are under consideration. Seattle will receive bids July 5 for about five miles of 54-inch steel water pipe. Aberdeen, Wash., is planning a $100,000 steel pipe line to convey water to Hoquiam. Shell Oil Co. proposes erection of five oil storage tanks of 20,000 gallons capacity each, at Seattle. Mill prices of plates are firm and unchanged at 2.35c.

No large structural projects have developed here lately but local fabricating plants have a fair amount of work on hand. Awards this week totaled 410 tons booked by the Isaacson Iron Works, as follows: 160 tons for the County-City building; 140 tons for redecking the Wenatchee bridge and 110 tons for the Boeing hangar, Seattle. Mill prices are unchanged at 2.35c.

Decision in Bethlehem Case Deferred

Washington, July 2.—Federal trade commission has adjourned until September without having taken any action in connection with the dismissal of the Bethlehem Steel Corp. complaint.

It had been anticipated by members of the commission themselves that they would dispose of this case last week, because it has been on their docket for final disposition for such a long time.

The commission alleged in its original complaint against the Bethlehem corporation that about Oct. 25, 1922, it acquired the Lackawanna Steel Co., and subsidiaries, and the Midvale Steel & Ordnance Co. and the Cambria Steel Co.

Unfair methods of competition were charged in that the Bethlehem corporation by uniting under common ownership and management and in that way effecting control of the sale and shipment of a substantially large proportion of the iron and steel products originating in their respective territories tended to substantially lessen competition contrary to the Clayton act and the federal trade act and to unduly hinder competition in the iron and steel industry in said territories.

The commission charged also that this acquisition would tend to unreasonably restrict competition so as to restrain trade contrary to the public policy declared in the Sherman act as recorded by the United States Supreme Court in several decisions, including the famous Beechnut decision.

In investigating this complaint employes of the commission alleged that they found also violation of the Pittsburgh-plus decision of the commission. There was some question as to whether the commission should amend the original complaint adding the Pittsburgh-plus charge or dismiss the entire complaint in view of certain decisions of the United States Supreme Court, including the Eastman Kodak decision.

Grouping Viewed as Crux of Rate Decision

Youngstown, O., July 2.—"To the eastern destinations, Youngstown has obtained under the rates prescribed by the I.C.C. in Docket 17000, part 6, a much better railroad freight adjustment than it has had in the past, compared with rates from Pittsburgh, Wheeling and eastern producing points," commented R. A. Eldridge, assistant traffic manager of the Youngstown chamber of commerce. "To Central Freight association points, Youngstown also obtains what appears to be a relative adjustment with other producing points, especially to points in Michigan where our rates are considerably reduced and the relation Youngstown vs Pittsburgh seems to be better than it has in the past.

"In rates to short-haul destinations, the tables of rates as calculated show that all producing points in short-haul territory receive a heavy increase, due to the mileage scale prescribed by the Interstate Commerce commission.

"One important feature of the decision is that the commission did not adopt the examiners' recommendation as to the application of group rates. Under the decision the carriers can apply the Youngstown group rate from all points in the Mahoning and Shenango valleys to such points as Cleveland, Akron, Canton, etc. which is the situation that applies today with the exception that rates from the Shenango valley to points in Ohio are higher than the rates from the Mahoning valley due to the Ohio commission refusing to permit Ohio intrastate rates to be increased under the 15.8 per cent case.

"Hence, if carriers apply a group rate from Mahoning and Shenango valleys to Cleveland, for instance, it will produce some peculiar rate situations. For example, the rate from Mahoning and Shenango valley group to Cleveland would be 13 cents, but in the reverse direction, the rate from Cleveland to New Castle would be 16½. From Warren to Cleveland the rate would be 13 cents, but from Cleveland to Warren the rate would be 11½. A similar picture is presented by comparing the situation from and to Elyria, O.

"The same situation can be pictured in the long-haul rates. As an example, the rate from the Youngstown district to Chicago would be 31 cents under the scale prescribed, but the rate from Chicago to New Castle, would be 32 cents, or 1 cent higher in the reverse direction."

There appears to be considerable doubt in the minds of traffic authorities in this district that the carriers will permit the proposed rate system to go into effect as prescribed by the commission as of Oct. 20 without waging some sort of a contest against it. This may lead to a suspension of the new rate system by the commission until a somewhat later date, thus allowing for a hearing on some sort of an appeal.

Operating Rates

Pittsburgh Holds 95, Chicago, Valley Feel Holiday Interruption

Pittsburgh—Producers continue to hold ingot production at about 95 per cent. Bessemer steel production shows a gain over a month ago, while open-hearth output is down slightly as the result of mechanical troubles. Strip producers continue at capacity. Sheet output holds close to 95 per cent, with tin plate operations at 85 to 90 per cent. Pipe mill operations are unchanged at 60 to 70 per cent for welded and 70 to 90 per cent for seamless.

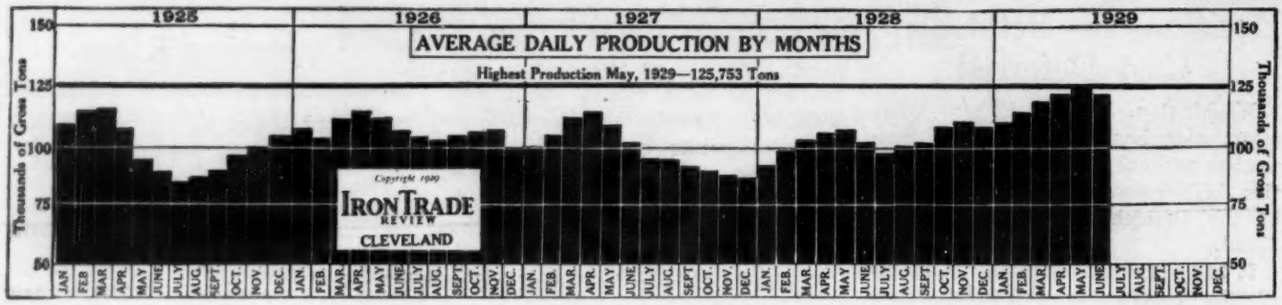
Chicago—Steel ingot output has been reduced slightly owing to the Fourth of July holiday, and production for the week is estimated at 95 to 98 per cent. Mills are closing down tomorrow night for the holiday and one producer will not resume with several of his finishing mills for several days because of shortage of semifinished material. Some mills were on extra turn last Saturday to relieve conditions for the holiday. Twenty-nine of the 36 steelworks furnaces in the district are active. Bar and plate mills are at practical capacity. Sheet mill operations have been 80 to 85 per cent for the district, but will close for the holiday.

Buffalo—Holiday reductions will be held to minimum. Tabulation of June production is expected to show new alltime records in some principal operating departments in one or more steelworks in the district. July schedules will be fully 90 per cent of normal.

Youngstown, O.—Continuity of steel making in the valley will be broken this week by the Fourth of July holiday. Generally, however, operations will resume Friday, particularly in open-hearth, strip, bar and some pipe departments. Of 51 open-hearth furnaces, 47 are in operation, one less than last week. Steel corporation subsidiaries are at 90 per cent. Schedules of independent sheet units vary, some closing down Wednesday afternoon until Sunday night. A few, however, will resume Friday. Strip mills will work all week, except Thursday. Independent tin plate mills are down for all this week, but Steel corporation plants will be off Thursday only. The Liberty tin mill at Leavittsburgh will resume Monday. The 13 active seamless and welded pipe mills will be off only Thursday. The Girard puddle mill is down all this week.

Chile To Make Steel

Washington, July 2.—The president of Chile has received authorization to spend $4,800,000 for acquiring shares in a company for the production of iron and steel in southern Chile. Electric furnaces are to be imported from the United States for a plant near Port Carral. In 18 months it is expected the output will be increased at the rate of 40,000 tons of finished steel annually.



Pig Iron Rate Highest for June

DAILY rate of pig iron production in June was a record for that month, although developing a moderate decline from May, when all previous daily peaks were surpassed. The June pig iron total was sufficient to make the first half of 1929 the highest in history.

The June daily rate of 123,853 gross tons compares with 125,753 tons in May and 102,745 tons in June, 1928. The previous daily average high for June was registered in 1923, at 122,262 tons.

The June total was 3,715,583 tons, against 3,898,344 tons in May and 3,082,340 tons in June, 1928. The 6-month total for 1929 is 21,638,016 tons, exceeding the previous high, the 20,828,401 tons of the first half of 1923, by 4 per cent. In the first half of 1928 output was 18,510,463 tons.

June production is divided into 687,188 tons of merchant and 3,028,395 tons of nonmerchant iron. Output of spiegeleisen and ferromanganese was 43,218 tons. On a daily average basis steelworks iron output was practically on a parity with May.

As of June 30 the number of stacks in blast was 220, an increase of one over May 31. Since last November each month has shown a gain in active stacks, the net increase since Nov. 30 being 26.

In June two merchant stacks blew in and two blew out. Those added included one each by the Globe Iron Co. and the Allen S. Davison stack at Neville island, Pittsburgh. One stack each was dropped by the Wheeling Steel Corp. at Martin's Ferry, O., and an Iroquois stack at Chicago by the Youngstown Sheet & Tube Co.

Of the three steelworks stacks blown in last month, the Tennessee Coal, Iron & Railroad Co. accounted for one, Bethlehem Steel Co. lighted one at Steelton and Carnegie Steel Co. one at Duquesne, Pa. The Carnegie company blew out one each at its Ohio and Duquesne works.

MONTHLY PRODUCTION

	1929	1928	1927	1926
Jan.	3,433,028	2,855,515	3,101,346	3,319,789
Feb.	3,218,376	2,898,668	2,940,604	2,923,850
Mar.	3,709,518	3,199,175	3,482,107	3,458,171
April	3,663,167	3,181,975	3,424,377	3,438,805
May	3,898,344	3,292,790	3,391,067	3,477,820
June	3,715,583	3,082,340	3,089,726	3,232,478
Total 6 mos.	21,638,016	18,510,463	19,429,227	19,850,913
July		3,072,711	2,954,625	3,224,663
Aug.		3,136,995	2,950,674	3,200,723
Sept.		3,063,593	2,782,500	3,163,269
Oct.		3,373,539	2,812,015	3,334,206
Nov.		3,304,656	2,661,863	3,237,992
Dec.		3,369,784	2,698,208	3,089,175
Total		37,831,741	36,289,112	39,100,941

Rate of Operation

(Relation of Production to Capacity)

	1929†	1928*	1927‡
January	80.3	67.8	71.2
February	83.3	73.6	74.7
March	86.7	76.1	79.8
April	88.7	78.0	81.2
May	91.1	78.3	77.7
June	89.8	76.0	73.2
July		73.2	67.7
August		74.4	67.6

†Based on capacity of 50,367,665 tons as of Dec. 31, 1928. *Based on capacity of 59,605,720 tons. ‡Based on capacity of 51,379,400 tons. Capacities computed by American Iron and Steel institute.

AVERAGE DAILY PRODUCTION

	1929	1928	1927	1926	1925
Jan.	110,742	92,113	100,043	107,039	108,781
Feb.	114,942	99,954	105,021	104,423	114,788
Mar.	119,662	103,199	112,326	111,554	115,207
Apr.	122,106	106,066	114,146	114,627	107,041
May	125,753	106,219	109,388	112,187	94,642
June	123,853	102,745	102,991	107,749	89,301
July		99,120	95,311	104,021	85,976
Aug.		101,193	95,183	103,249	87,328
Sept.		102,120	92,750	105,442	90,862
Oct.		108,824	90,710	107,555	97,351
Nov.		110,155	88,728	107,933	100,775
Dec.		108,702	87,039	99,651	104,808
Ave.	119,547	103,365	99,422	107,126	99,645

DIVISIONS OF PRODUCTION

1928	Merchant	Non-merchant	Spiegel and ferro-manganese
Jan.	649,654	2,205,861	32,510
Feb.	579,298	2,319,370	27,376
Mar.	597,106	2,602,069	34,587
Apr.	586,045	2,595,930	33,599
May	596,664	2,696,126	38,466
June	589,127	2,493,213	38,628
Total 6 mos.	3,597,894	14,912,569	205,166
July	584,611	2,488,100	42,230
Aug.	563,510	2,573,485	33,585
Sept.	580,344	2,483,249	31,170
Oct.	643,043	2,730,496	33,519
Nov.	632,869	2,671,787	38,811
Dec.	686,431	2,683,353	34,541
Total	7,288,702	30,543,039	419,022
1929			
Jan	744,448	2,688,580	37,210
Feb.	665,648	2,552,728	34,419
Mar.	740,966	2,968,552	37,997
Apr.	740,311	2,922,856	44,406
May	772,014	3,126,330	35,598
June	687,188	3,028,395	43,218
Total 6 mos.	4,350,575	17,287,441	232,848

JUNE PIG IRON PRODUCTION

	No. in blast last day of month June	May	Total tonnage made Merchant	Nonmerchant	Totals June	May
Ohio	47	48	125,901	743,152	869,053	903,891
Pennsylvania	79	77	147,536	1,105,653	1,253,189	1,316,184
Alabama	17	16	101,193	117,947	219,140	235,449
New York	16	16	104,485	130,516	235,001	250,780
Illinois	19	20	130,562	263,633	394,195	408,059
Colorado	2	2				
Indiana	16	16				
Maryland	6	6	5,341	486,147	491,488	523,162
Virginia	1	1				
Wisconsin	0	0				
Kentucky	2	2				
Massachusetts	1	1				
Tennessee	3	3	26,772	86,780	113,552	116,038
Utah	1	1				
West Virginia	3	3				
Michigan	4	4				
Minnesota	3	3				
Missouri	0	0	30,825	63,913	94,738	107,693
New Jersey	0	0				
Texas	0	0				
Spiegel and ferro—all states			14,573	30,654	45,227	37,088
Total	220	219	687,188	3,028,395	3,715,583	3,898,344

Renew Plea for $3 Pig Iron Duty

Merchant Furnaces Ask for Protection—Fight on Manganese Ore Duty Flares Up—Hearings Nearly Ended

WASHINGTON, July 2.—Opinions pro and con on the tariff bill as passed by the house May 28 were paraded all last week before the metals subcommittee of the senate finance committee. As when the house ways and means committee heard testimony, the widest difference of opinion developed on manganese ore, both sides amplifying their arguments. A strong case was made for a $3 per ton duty on pig iron, the rate in the house bill being $1.12½.

When the subcommittee, of which Senator Reed of Pennsylvania is chairman, adjourned yesterday it still had about fifty witnesses to hear, chiefly on watches and other small items. These witnesses will appear next Monday. Last week's proceedings, as noted in IRON TRADE REVIEW of June 27, were led off by John A. Topping and Thomas J. Doherty, for the American Iron and Steel institute.

George F. Collins appeared before the committee on behalf of the legislature of Colorado, taking up tungsten, lead, zinc and silver. He asked for a 50 per cent increase in the present tariff on tungsten ore and metal, the tariff to include alloys, metal scrap, and all material of every kind and description containing tungsten. He also asked that a duty of 1½ cents per pound be put on zinc of whatever content and he requested an increase of 33 1/3 per cent in the present rates on lead ores, lead products and metallic lead.

Would Shield Small Makers

Col. F. B. Richards appeared representing the Hanna Furnace Co., Cleveland, on pig iron and proposed that a rate of $3 per ton be put in the bill. The big steel companies, said Colonel Richards, are not affected by the pig iron tariff. They don't sell it but they produce for their own use.

"In 1925 and 1926," he said, "the pig iron imported amounted to 887,000 tons and there was not only a loss to our labor, by reason of curtailed operations of iron going against this competition, but the railroads suffered a loss of over 3,000,000 tons of freight."

Colonel Richards called the committee's attention to the difference between merchant and nonmerchant pig iron production. He stated that under the tariff he does not hope to keep Indian pig iron out, and called attention to the fact the Indian pig iron industry is subsidized.

Indian labor, said Colonel Richards, is paid from 8 to 16 cents per day while similar labor in this country commands from $4 to $5 per day. The $3 rate asked, he stated, "would fairly well protect us from general European competition." Pig iron manufacturers on the coast have been depressed because of the imports of Indian pig.

Under Dingley Level

John W. Logan, of the Alan Wood Steel Co., Conshohocken, Pa., and Charles Hart, of the Wrought Iron Co. of America, Philadelphia, also supported the $3 rate asked for by Colonel Richards.

Mr. Logan said that he was speaking for his own firm, a large number of manufacturers of merchant iron in seaboard districts, and the American Iron and Steel institute.

He called attention to the fact that in 1909 there was a duty on pig iron of $2.50 per gross ton, that under the Underwood tariff it was on the free list while in 1922 the rate was 75 cents. In 1927 by Presidential proclamation it was raised to $1.12½ and that this year the bill in passing the house had left the rate at $1.12½.

"In 1922, when the tariff law was under consideration by congress," said Mr. Logan, "international trade, disrupted by the war, was not stabilized. Possible sources and effectiveness of foreign competition were not realized even by producers themselves. That large tonnages of pig iron from British India would be sold in the United States at prices materially lower than our cost of manufacture was not dreamed of.

"Also, congress failed to credit the representations of those who then foretold serious competition to be expected from western Europe. These circumstances resulted in a duty on pig iron which the reports of the tariff commission and a proclamation by the President have since declared to be insufficient to protect the American manufacturer.

"Protective duties," he continued, "on the products made from pig iron are now as high or higher than those existing when pig iron had a duty of $2.50. Pig iron needs and is entitled to a duty in line with that on its products."

Almost 80 per cent of the entire production of pig iron in the United States, Mr. Logan told the committee, is made by the steel companies for their own consumption. and importation of foreign iron does not compete with it.

He told the committee, too, that "tonnage of imports is not a true measure of losses due to foreign competition. In many cases American manufacturers have been forced by foreign competition to cut their prices to cost or lower in order to keep their men and plants employed. Such conditions, naturally, are not reflected in any list of importations."

Mr. Logan testified that "the lack of an adequate protection duty on 'iron in pigs' will inevitably drive independent manufacturers out of business. The domestic purchaser of this commodity will then be in the position of being dependent for his raw material, either on the large steel corporations who frequently, especially at times of brisk demand for steel, have no iron for sale; or, on the foreign market."

Debate Manganese Ore Duty

V. R. Lanstingh, New York, spoke on behalf of tungsten and molybdenum asking that hammered, rolled, and milled scale be included in paragraph 301. He asked that a compensatory duty be placed on the finished products of molybdenum and tungsten. He asked further that tungsten metal be given a rate of 60 cents per pound and 50 per cent ad volorem and that molybdenum metal powder rate be increased from 15 to 40 per cent.

L. E. Block, chairman of the

Board, Inland Steel Co., Chicago, and speaking also on behalf of the American Iron and Steel institute on manganese, asked that it be placed on the free list. He was supported by R. T. Caldwell, American Rolling Mill Co., Ashland, Ky.; Percival Chrystie, Taylor-Wharton Iron & Steel Co., High Bridge, N. J., and by Dr. C. K. Leith, Madison, Wis., on behalf of the institute.

"The results of the last six years production of manganese," said Mr. Block, "clearly show that domestic production will never approach domestic requirements, let alone satisfy them.

Essential for Munitions

"Manganese ore," he continued," is an absolute essential in making munitions. If we were to use our entire supply of manganese ore in the United States for commercial purposes, we would, in the event of another war, be wholly dependent for munitions on our ability to import manganese from India, Russia, Africa and South America. The longer we can postpone the exhaustion of our limited supply of manganese the stronger position we will be in for national defense.

"The total requirements for the American steel industry in the last six years were 3,894,820 tons or more than the total available domestic deposits. Stated in another way, if congress would prohibit the importation of manganese ore for three or four years the entire available manganese deposits in the United States would be exhausted."

Dr. Leith, also talking on behalf of the institute in favor of putting manganese on the free list, said:

The steel industry is asking that the tariff on manganese ore be eliminated "on the ground that it has failed in its primary purpose of developing a domestic industry capable of supplying more than an insignificant part of the domestic requirements; that the effort to do so under the tariff has confirmed the fact, long before known, that the country does not have sufficient supplies of manganese ore of commercial grades; that the effort is futile and results in financial loss to manganese producers, to the steel industry, and to consumers; that it results in depletion of limited high grade supplies which should be conserved for national emergency.

The steel industry also asks that the present compensating duty on ferromanganese be placed on a 25 per cent ad valorem basis to bring it into line with the requested elimination of tariff on manganese ore.

The existence of immense quantities of manganese bearing rock has long been recognized. Manganese is widely disseminated in the earth, like iron and aluminum. Laboratory processes are known which will recover it, no matter how minute the quantity, but it is a question of cost. It is our contention that only a small part of the total low grade resources can be made available for ferro manufacturers at prices anywhere near commercial. The only commercially profitable operations now in existence in this class of ores are possible because of their use for purposes other than the making of ferromanganese or as by-products to the mining of other minerals. If new processes now under experiment become perfected, limitations of their commercial application to the available ores promise at best, even with higher manganese prices than now exist, only a few small enterprises which in the aggregate will not materially lessen our requirement for foreign ore.

Mr. Christie told the committee that manganese ore should be on the free list and that there should be a reasonable duty on ferro-manganese. There should be enough duty on the ferro, he said, to protect the domestic manufacturer.

The manganese ore situation from the domestic producer's standpoint was thrashed out through a number of witnesses. The main argument was submitted by J. Carson Adkerson, president of the American Manganese Producers association. Others who testified on behalf of the domestic producers included: K. M. Leute, General Manganese Corp., Detroit; Harold A. Pumpelly, Domestic Manganese & Development Co., Butte, Mont.; Adrian Nagelvoort, General Ore Concentrating Co., Wilmington, Del.; E. S. Clarke, Chapin Exploration Co., Chicago, and Paul Tyler, bureau of mines, Washington.

Producers Back Tariff

All appearing on behalf of domestic producers backed statements made by Mr. Adkerson as to tariff protection needed. Mr. Adkerson urged the committee to adopt the amendment offered to the tariff bill by Senator Oddie, of Nevada, which provides for two changes in the manganese provisions. One would increase from 1 to 1½ cents per pound the duty on ores containing in excess of 30 per cent of manganese and the second is the extension of protection to cover lower grade ores of 30 to 10 per cent manganese, which he claimed are now "being imported in increasing tonnages, duty free under the present tariff. In consequence of these importations," he continued, "of low grade ores the domestic industry is being deprived of its natural home market."

Mr. Lute told the committee that the present tariff is not protecting the industry. He spoke of the experimental work being done by his company at the Michigan College of Mines and said that the company has 50,000,000 tons of manganese ore to develop in South Dakota.

Former United States Senator C. S. Thomas, speaking on behalf of the David Taylor Co., New York, on tungsten, opposed the house amendment to section 3, paragraph 301, increasing the duty on steel scrap containing tungsten, vanadium and chromium.

He told the committee that this paragraph under the present tariff law levies a duty of 75 cents per ton on all steel scrap valued at not more than 7 cents a pound and fit only to be remanufactured. The house amended this by imposing a duty of $1 per pound on vanadium, 72 cents on tungsten and 4 cents per pound on chromium. He claimed that these rates would prohibit importations of this scrap.

"There is no protection in the duty here challenged," said Senator Thomas. "It is destruction and nothing else."

Seeks Higher Duty on Tungsten

Nelson Franklin, of Washington, appearing on behalf of tungsten producers, told the committee they had asked the house committee for a 50 per cent increase in rates but had only got 11 per cent. He justified the high rate of duty on tungsten by the difference in the cost of labor between this country and China from which most of the tungsten is imported.

Fred Truempy, on behalf of Truempy, Faesy & Besthoff, New York, asked for the elimination of the 5 cent duty on silicon-aluminum. He told the committee also that his firm had not imported any alsimin into the United States since 1927 and it has been impossible under the present classification of the customs service. He recommended that subdivision (j) of paragraph 302 be eliminated and that subdivision (o) be amended to read as follows:

(o) Ferrosilicon-aluminum alloys used in the manufacture of steel and all alloys used in the manufacture of steel or iron, not specifically provided for, 25 per cent ad valorem.

M. K. Tholand, an importer of New York City, appeared asking that the duty on sponge iron be decreased. He stated that the present duty is three-tenths of 1 cent per pound. This iron, he said, was not enumerated in the tariff act of 1922. It is not produced in the United States commercially, he said.

George E. Dix, Steel Union Co., New York, asked that the house rate of sheet piling of $4 per ton be allowed to stand instead of $10 per ton

(*Concluded on Page* 66)

Mileage Scale Rates Vex Chicago

Western Traffic Men See Advantage to Pittsburgh, Which Is Complacent —Much Depends on Carriers' Application of Decree

CHICAGO, July 2.—While iron and steel traffic authorities here have not completed a thorough analysis of the mileage scale rates proposed for iron and steel shipments, the general view is that Chicago district steel producers are likely to receive a "bad break" in the final adjustments.

The feeling exists that Chicago producers are placed at a disadvantage in relation to Pittsburgh. It is pointed out that the geographic location of steel producing units does not lend itself to the general principle of lower tariffs for long hauls and higher rates for short hauls. The view obtained thus far is that Chicago steel shippers will find freight rate conditions as a result of the mileage scale reversed from what should be the most favorable shipping advantages. It is pointed out that the most advantageous position would be that of lower rates for the long hauls. Analysis thus far leads to the view that railroads will be given an opportunity to absorb in the short haul rates the losses of revenue from the long haul rates.

Some traffic authorites here feel that eventually the Pittsburgh district may experience more suffering in the aggregate short haul rates than the Chicago area, although the opinion prevails that Pittsburgh's position is more generally favorable in relation to the competitive markets that can be reached by Chicago. Long haul rates from Chicago to points in Michigan, including the Detroit area, probably will be reduced somewhat under the mileage scale, while the rates from Chicago to St. Louis and Milwaukee are increased. The present rate from Chicago to Detroit on finished steel is 27.5 cents, and the proposed rate 25 cents.

It is pointed out that much depends on the carriers in their preparation of tariffs under the new order and the grouping of points of origin. Traffic men feel that the railroads, by cooperating with existing industrial and market conditions, and with careful regard to equitable groupings of origin points, may relieve shippers of some disadvantages that now seem obvious. It is pointed out, on the other hand, that the carriers, by taking advantage of all opportunities offered to increase rates, may help to create a freight rate structure on steel shipments that will be the subject of attack and dissatisfaction. It is recognized that little leeway has been granted the carriers in the grouping of points of destination, except for switching districts. It is not entirely clear as to what procedure eventually will be worked out by the roads in destination groping.

In general, traffic authorities in this territory voice opposition to the principle of the mileage scale. They point out that a justifiable rate covering 100 miles in Pennsylvania might have a vastly different significance from rates for a similar mileage in Illinois, with local economic and commercial conditions disregarded.

Pittsburgh Sees Delay in Filing Tariffs

Pittsburgh, July 2.—Traffic managers in the Pittsburgh district express doubt that the new freight rate scale on iron and steel products recently authorized by the interstate commerce commission to go into effect Oct. 20 will be in its final form for introduction on that date. This is caused by the fact that since the new scale is on a mileage basis a large amount of computation work is necessary to determine the shortest routes over which carload traffic can be moved without transfer of lading, which is the prescribed method of determining distances between various points. Final determinations as to the shortest routes, it is believed, will make minor changes not now apparent in some of the routes.

Pittsburgh producers generally feel that the new freight rates place them in much better relationship with their eastern and western competitors and give them advantages not possible under the old fifth class basis. The St. Louis market will become closer to Pittsburgh in the matter of freight as the result of a lower rate coupled with an increase from St. Louis to Chicago.

It is not believed that the railroads will attempt to advance switching charges. The location of so many mills on the three rivers in the Pittsburgh district has made possible the use of water transportation in many short hauls, and increased switching charges, it is believed, would have the effect of stimulating the river movement.

Cleveland Sees Benefit

Cleveland, July 2.—The transportation department of the Cleveland chamber of commerce appraises the interstate commerce commission's decision in Docket No. 17,000 as "in general appearing to be of substantial advantage to this community, although our short haul commodity rates for destinations up to about one hundred miles will be advanced. Competitive maladjustments will be almost entirely eliminated. This is particularly true with regard to shipments to points in western Ohio, Indiana and Illinois."

Steel Rate Cut Proposed

Milwaukee, July 2.—The Chicago & North Western and Chicago, Milwaukee, St. Paul and Pacific railroads have asked the interstate commerce commission to authorize a reduction from 9 cents to 7½ cents per 100 pounds in the freight rate on finished steel from Gary, Ind., to Milwaukee. This is to meet barge shipments. Milwaukee industries consume about 500,000 tons of steel a year, most of it coming from the Chicago district.

Chicago Protesting Cut to Southwest

Chicago, July 2.—Iron and steel interests in the Chicago district have joined with the Chicago association of commerce in protesting to the interstate commerce commission against proposed lower rates, as of July 10, on iron and steel articles from Wheeling, W. Va., Youngstown, Cleveland and Canton, O., for water shipment from North Atlantic ports to the Southwest by way of the Gulf ports and connecting rail lines.

The proposed lower tariffs, filed by

(*Concluded on Page* 59)

Industrial Men in the Day's News

F. A. Merrick, New President, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

WHEN Westinghouse acquired the Steel Motors Co. it also got Mr. Merrick and his first major achievement was the preparation of plans for the Canadian Westinghouse Co. Ltd., plant.

HE WAS responsible for record-breaking machine gun production at Chicopee Falls, Mass., during the war, after which, for a time, he was located in London, England.

HE SUCCEEDS E. M. Herr, who resigns to take an extended vacation, after discharging the president's duties for 18 years.

THREE countries—United States, Canada and England—have provided the spheres of endeavor for the business career of F. A. Merrick, elected president, June 26, of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., with headquarters at Pittsburgh. He has been vice president, general manager and director since June, 1925. He succeeds E. M. Herr, who has filled the president's chair since 1911 and who now resigns to take an extended vacation. Mr. Herr has been elected vice chairman of the board of directors, of which A. W. Robertson is chairman.

Mr. Merrick is a native of New Jersey and received his technical education at Lehigh university. Shortly after his graduation he was employed by the Steel Motors Co. a subsidiary of the Lorain Steel Co., where he was responsible for many important electrical inventions and where he held the position of manager and chief engineer.

In the acquisition of the Steel Motors Co. by the Westinghouse company, Mr. Merrick entered the Westinghouse organization. He immediately was selected to prepare plans for a plant in Canada and upon the formation of the Canadian Westinghouse Co. Ltd., in 1903, was sent to the dominion as superintendent. In this position his ability for organization was quickly recognized. In turn he became manager of works and later vice president and general manager of Canadian Westinghouse Co. Ltd.

In the World war emergency Mr. Merrick was assigned to organize the operations of the New England Westinghouse Co., Chicopee Falls, Mass., to manufacture rifles for the Russian government. When the United States entered the war, further demands were made upon the plant for American war material.

Mr. Merrick, although required to reorganize and largely re-equip his factory to fulfill American war contracts, completed an order for 60,000 Browning machine guns within 11 months after operations were begun. This manufacturing achievement has since generally been regarded in the industrial field as being without parallel.

After the war Mr. Merrick was in London for two years as special representative of the Westinghouse Electric International Co., after which he returned to Canada to resume his duties as vice president and general manager of the Canadian Westinghouse company.

His achievements before, during and following the World war won for him in January, 1925, the position of vice president and general manager of the Westinghouse Electric & Mfg. Co., with headquarters in East Pittsburgh, Pa.

Men of the Industry

HARRY HOLIDAY, general manager of sales in the forged steel wheel division, the American Rolling Mill Co., Middletown, O., has been appointed general superintendent of the Butler, Pa., works, Columbia division, of the American company. Mr. Holiday has been in the steel industry since 1912, when he graduated from Carnegie Institute of Technology. He became affiliated with the American company in 1923 as assistant to the vice president, in charge of construction of steel works. Later he was appointed assistant to the president and after the Columbia Steel Co. was purchased, he was elected a vice president of that division. He has been general manager of sales since December, 1927, with headquarters in Pittsburgh.

* * *

Russell Hurlbut, formerly of Hartford, Conn., has been appointed manager of the Paris, France, office of Niles-Bement-Pond Co., New York.

* * *

Thomas B. Bennett, president of the Bennett Pumps Corp., Muskegon Heights, Mich., has been made secretary-treasurer of Carew-Liedgren Inc., Muskegon, Mich.

* * *

Frederick E. Moskovics, Indianapolis, formerly president of the Stutz Motor Car Co. of America, has been elected president of the Improved Products Corp., New York.

* * *

E. A. Emerson, vice president of the Armco International Corp., Middletown, O., was recently elected president of the Foreign Trade association of the Cincinnati chamber of commerce.

* * *

C. W. Fisher, formerly Chicago district sales manager for the McMyler-Interstate Co., Bedford, O., has been elected vice president and general manager of the Austin Machinery Corp., Muskegon, Mich.

* * *

J. Russell Waite, Charleston, S. C., has been made president of the Indian Motorcycle Co., Springfield, Mass., to succeed Louis E. Bauer, resigned. The company now is controlled by Mr. Waite and Charles A. Levine.

* * *

J. M. McNeal, direct representative in Europe of the Landis Machine Co., Waynesboro, Pa., manufacturer of threading machinery, sailed June 20 for England. He had been at the company's home office for about a month.

* * *

N. T. Dyett has been elected president of the General Cable Corp., New York, to succeed Walter Robbins, now chairman of the board. Mr. Robbins succeeds J. W. Marsh, who resigned as chairman and was elected vice chairman.

* * *

Edward Bausch resigned recently as general manager of the Bausch & Lomb Optical Co., Rochester, N. Y. He is to be succeeded by M. Herbert Eisenhart, formerly assistant general manager and vice president. Mr. Bausch retains his place as president of the company.

* * *

Robert E. Newcomb recently resigned as superintendent of Deane-Glake-Knowles, Holyoke, Mass., subsidiary of the Worthington Pump & Machinery Corp. A presentation of a watch and chain, together with a letter of appreciation, was made by 240 employes.

* * *

John Gwilliam, former vice president of the Gwilliam Co., 360 Furman street, Brooklyn, N. Y., manufacturer of ball and roller bearings, has been elected president to succeed the late George T. Gwilliam.

Mark R. M. Gwilliam now is vice president and treasurer and Maurice B. Welsh continues as secretary.

* * *

David J. Grant, for more than 12 years in charge of industrial relations work for Campbell, Wyant & Cannon Foundry Co., Muskegon, Mich., has been named Monroe, Mich., industrial commissioner, filling the position occupied for six months by Walter R. McLean, who has re-entered the University of Michigan, Ann Arbor, Mich.

* * *

Charles Pack, who recently resigned as first vice president and assistant general manager of the Doehler Die Casting Co., Brooklyn, N. Y., after a 13-year connection, has established headquarters at 233 Broadway, New York, as consulting engineer in the die casting industry. He specializes in new installations of production equipment.

* * *

Frank J. Dutcher, since 1909 president of the Draper Co., Hopedale, Mass., manufacturer of textile machinery, resigned to become chairman.

E. H. Bristow Draper, treasurer, was appointed president to succeed him, and C. Frederick Butterworth, formerly assistant treasurer, now is treasurer.

G. Russell Goff is the new assistant treasurer, succeeding Mr. Butterworth.

* * *

J. M. Reifsnider, for seven years general manager of the Page Steel & Wire Co., Adrian, Mich., resigned July 1, to become general manager of the new automobile bumper manufacturer being organized at Toledo, O., by Gordon Mather, president of the Mather Spring Co., Toledo.

H. L. Perry, plant superintendent for the Page company, also resigned to assume similar duties at the plant of the new Toledo company. He has been succeeded by G. Y. Greima at Adrian.

* * *

Charles Lawrence, president, Wright Aeronautical Corp., New York, will be a vice president of the new Curtiss-Wright Corp., recently formed by the merger of the Wright corporation and the Curtiss Aeroplane & Motor Co.

Glenn H. Curtiss is to be a member of the technical committee of the new concern. Richard F. Hoyt will be chairman of the board and C. M. Keys president. Plans for the formation of the new holding company have received informal approval of the bankers of some of the constituent companies.

* * *

F. D. Kamerer has been appointed auditor of disbursements of the General Electric Co., Schenectady, N. Y., to succeed George F. Mosher, recently elected assistant treasurer. Mr. Kamerer was born in Union City, Pa., and attended the Wharton school of finance, University of Pennsylvania. He entered the employ of the General Electric Co. in April, 1918, and was assigned to the traveling auditors' staff in January, 1920. Two years later he was named chief traveling auditor. After one year's special assignment with the General Contract Purchase Corp. he became, in March, 1927, vice president and comptroller, with offices at 120 Broadway, New York. When the General Electric Co. disposed of its interest in the Contract Purchase corporation in June,

1928, he returned to Schenectady and was engaged on special assignments.

* * *

A. M. Oppenheimer, president of the Apollo Steel Co., Apollo, Pa., has left for Europe on a two months' trip.

* * *

W. H. Pouch, of Concrete Steel Co., New York, sailed July 3 for Europe to be away until Sept. 17.

* * *

W. J. Holliday, of W. J. Holliday & Co., Indianapolis, sails July 25 for Europe and will return Oct. 15.

* * *

Louis W. Robertson has succeeded Venable Moore as district sales manager for Virginia Bridge & Iron Co. at Dallas, Tex.

* * *

Robert E. Tally, general manager of the United Verde Copper Co., New York, has been elected Arizona vice president of the American Arbitration association.

* * *

E. F. Talmage, formerly identified with the Cleveland office of the Halcomb Steel Co., now is district sales manager at 360 North Michigan avenue, Chicago, with the Timken Steel & Tube Co., Canton, O.

* * *

John V. W. Reynders, consulting engineer, 120 Broadway, New York, sailed from New York, June 27, for a brief business trip to England and the Continent. He expects to return to New York shortly after Aug. 1.

* * *

A. L. Button, formerly secretary of the Trumbull Steel Co., Warren, O., prior to its absorption by the Republic Iron & Steel Co., Youngstown, O., has become affiliated as secretary with the Peerless Electric Co., Warren.

* * *

E. A. Perry was appointed purchasing agent of the National Radiator Corp., with headquarters at Johnstown, Pa., effective July 1. Mr. Perry succeeds R. D. Felton, resigned, to whom he has been assistant for several years.

* * *

Mrs. Margaret Hall, wife of the late Roy Hall, has been elected president of the Inland Iron Co., 300 Santa Fe avenue, Fresno, Calif., distributor of iron and steel, to succeed him.

E. E. Hollister, with the company for the past two years, has been appointed manager and secretary.

* * *

Harry M. Hazeltine, for three years connected with the McWane Cast Iron Pipe Co., Birmingham, Ala., is now identified with the Fremont Foundry Co., Fremont, O. Prior to his employment by the McWane company he was connected with Dodge Bros., Detroit, for three years and with the Fremont Foundry Co., Fremont, O., for nine years.

* * *

R. B. Tripp, eastern manager for Gears & Forgings Inc., Cleveland, has been appointed general sales manager. Since the death, last May, of L. Glen Hewins, western manager, Mr. Tripp has been directing all sales of the company.

R. K. Plummer, formerly in charge of Wisconsin territory, has been appointed Mr. Tripp's assistant.

* * *

Edward P. Warner, formerly assistant secretary of the navy for aeronautics, Washington, and who recently became editor of *Aviation*, was elected president of the Society of Automotive Engineers at its meeting held at Saranac Lake, N. Y., June 27. Mr. Warner has been professor of aeronautical engineering at Massachusetts Institute of Technology.

* * *

Dr. Edward R. Berry has been elected vice president and a director of Inland Utilities Inc., 50 Broadway, New York, recently formed to acquire extensive manufactured and natural gas and waterworks properties in Pennsylvania and West Virginia. Dr. Berry is a graduate of the University of Maine, was assistant director of the Thomson research laboratory, and later served as consulting engineer for the General Electric Co.

* * *

C. F. Hopkins, vice president of the Ajax Metal Co., Philadelphia, has been elected president of the Philadelphia Foundrymen's association.

B. H. Johnson, R. D. Wood & Co., Florence, N. J., has been elected vice president.

Frederick M. Devlin, president of the Philadelphia Hardware & Malleable Iron Works Inc., and George M. Benkert, president of the Fairmount Foundry Inc., have been elected directors for a term of three years.

* * *

Dr. Joseph Slepian, research engineer of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., was honored June 25 by the American Institute of Electrical Engineers in convention at Swampscott, Mass., in being granted an award for the best theoretical paper presented before that organization during 1928 and the first half of 1929. It was entitled "The Extinction of an Alternating Current Arc" and was presented before the summer convention of the institute, June 25 to 29, 1928, in Denver.

* * *

Allan Bertram Field, English inventor and consulting engineer for the Metropolitan Vickers Electrical Co., Ltd., Manchester, Eng., was presented the initial Benjamin G. Lamme medal at the convention of the American Institute of Electrical Engineers, June 26, at Swampscott, Mass. The Lamme medal was created by the provision of the will of the late Benjamin G. Lamme, electrical scientist and chief engineer of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. It is given for meritorious achievement in electrical machinery design.

* * *

William H. Collins has been appointed general superintendent of the Goodyear-Zeppelin Corp., Akron, O., which is building two super-dirigibles for the United States navy. Since his graduation from Lafayette college in 1915, Mr. Collins' engineering experience has been in the construction of sea-going ships, first with the Newport News Shipbuilding & Dry Dock Co., and from 1917 on, with the Bethlehem Shipbuilding Corp. He was advanced from assistant superintendent of the latter company's Harlan plant to be superintendent of hull construction in 1921. He now becomes assistant to Dr. Karl Arnstein, vice president of the Goodyear-Zeppelin Corp.

* * *

Robert E. Belknap, for a number of years New England agent at Boston of the Bethlehem Steel Corp., resigned June 29 on account of ill health. He will take an extended vacation. Mr. Belknap became the New England manager for Bethlehem immediately after that corporation took over the Lackawanna and Midvale companies. Under his management the company made many extensive developments in the New England territory.

Robert B. Wallace, for two and one-half years Boston manager of structural and plate sales for the Bethlehem company, was July 1 appointed manager of sales for the Boston district. He has been connected with the Bethlehem company for 19 years. He was salesman for seven years, and from 1917 to 1922, he served as sales agent. At that time the company acquired the Lackawanna, Midvale and Cambria companies and Mr. Belknap was made Boston sales manager. Mr. Wallace again became salesman, but more than two years ago he was appointed manager of the plate and structural sales and now he succeeds Mr. Belknap.

Thomas Dransfield, sales engineer for two years in the Boston office, succeeds Mr. Wallace as manager of structural and plate sales.

The Bethlehem Shipbuilding Corp. remains a separate organization, with C. D. Hubbard as Boston district sales manager.

Obituaries

WORCESTER R. WARNER, 83, who died at Eisenach, Germany, while on a European tour, as noted briefly in IRON TRADE REVIEW of June 27, founded the Warner & Swasey Co., Cleveland, with Ambrose Swasey in 1881. He held executive positions with the company, such as the presidency and board chairmanship but retired 18 years ago.

Mr. Warner was born in Cummington, Mass., May 16, 1846, where he was educated and where his bent for mechanics early was manifested. At 19 he removed to Boston, obtaining employment in the mechanical engineering office of George B. Brayton, plant manager of the American Safety Steam & Engine Co. Later the offices were removed to Exeter, N. H., where for three years Mr. Warner assisted Mr. Brayton in designing engines and boilers. In 1869 he and Mr. Swasey were employed by the Pratt & Whitney Co., Hartford, Conn., where he remained for 11 years, the latter eight as departmental foreman. After several months in Chicago where they had received several telescope orders, Messrs. Warner and Swasey located in Cleveland in 1881, selected as the better territory for the exploitation both of large telescopes and precision equipment. Hand lathes, horizontal boring machines and turret lathes were added. Other products include prism binoculars, sextants, gun sights, range finders and field telescopes. The company was incorporated in 1900.

Mr. Warner was a charter member of the American Society of Mechanical Engineers and was its president in 1897. He was past president and honorary member of the Cleveland Engineering society, a member of the British Astronomical society, and of the American Astronomical and Astrophysical society; a Fellow of the Royal Astronomical society and of the American Association for the Advancement of Science. He was a director of the Guardian Trust Co. and the Society for Savings, Cleveland, and a trustee of Western Reserve University and Case School of Applied Science.

* * *

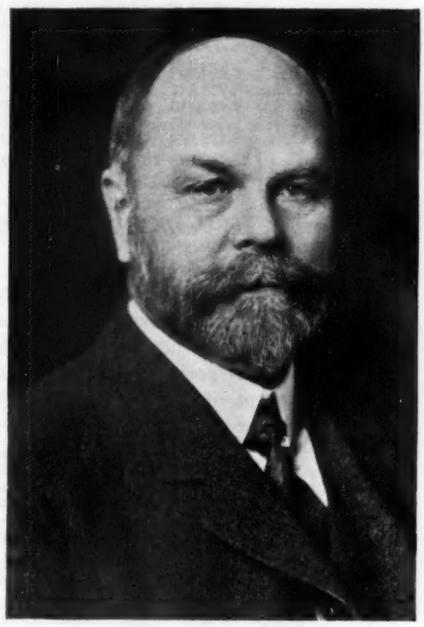
Lewis T. Houghton, 86, president, Houghton Mfg. Co., Worcester, Mass., inventor and pioneer in Worcester industry, died June 23. Mr. Houghton with H. W. Buxton and Thomas Prince formed the Houghton & Buxton Mfg. Co. to manufacture cold-drawn steel fittings and sheet metal specialties.

* * *

Frederick Cadmus, 67, a retired Bloomfield, N. J., foundryman, died at his home in Glen Ridge, N. J., June 28.

* * *

Edward Simon Davis, 48, president of the Davis Tool & Engineering Co.,



WORCESTER R. WARNER

Detroit, died recently at his home in that city.

* * *

Charles H. Doelger, 64, senior member of Doelger & Kirsten, Milwaukee, manufacturer of alligator shears, died June 25. He had been ill for nearly a year. Mr. Doelger was born and reared in Milwaukee, and 40 years ago, with Oscar E. Kirsten, founded a small machine shop which they developed into one of the largest concerns of its kind in this country.

* * *

Church A. Williams, formerly associated with steel companies in the Pittsburgh and Chicago districts, died in Pittsburgh, June 23. He was connected with the Illinois Steel Co., Chicago, for a number of years, and later was superintendent of the Verona Steel Castings Co. During the war he was superintendent of open-hearth furnaces for the Tata Iron & Steel Co. in India. Mr. Williams recently was engaged in life insurance business in Pittsburgh.

Code Adopted by Metal Lath Industry

Washington, July 2.—The metal lath industry meeting here at a trade practice conference under the auspices of the federal trade commission adopted 22 rules of practice. Commissioner William E. Humphrey presided.

The questions discussed and the rules of practice adopted included inducing breach of contract, misbranding, misrepresenting competitors' prices, defamation of competitors, secret rebates, sales below cost, definitions of manufacturer, dealer and contractor, published prices, sales at carload prices, guaranteed prices, consignment sales, standard contracts, cost accounting, commercial bribery, dumping, arbitration, price discrimination and similar subjects.

The trade also provided for a continuation of the conference when and if necessary.

Chicago Protesting Cut

(*Concluded from Page* 55)

the Baltimore & Ohio, Pennsylvania, New York Central and Erie railroads, would provide lower rail-water transportation to points in Arkansas, Louiana, Oklahoma and Texas than the all-rail haul from Chicago and consequently discriminate against the Middle West, according to the association of commerce.

The Chicago and Middle Western intervenors have contended that no changes should be made in the rail-water adjustment to the Southwest until the commission decides the general case now pending and involving rates on all freight traffic between the East and Southwest.

June Auto Steel Record

Chicago, July 2.—Preliminary reports here show that June specifications for automotive steel to the mills in this district made a record for that month.

Current Statistics of Industry

May Barrel Output Is Best This Year

Washington, July 2.—May production of steel barrels was the highest of this year as reported by 27 companies operating 31 plants to the department of commerce, being 836,532 or 72.0 per cent of capacity, as compared with 64.8 per cent in April and 59.8 in May, 1928. Department of commerce comparisons follow:

1928	Production	Shipments	Unfilled orders for delivery within 30 days	Unfilled orders for delivery beyond 30 days
May	696,281	694,843	824,549	932,568
Tot., 5 mo.	2,995,813	2,989,834	.....	.....
June	712,779	717,496	819,443	840,313
July	647,844	645,881	841,346	891,066
Aug.	677,313	675,600	319,495	744,863
Sept.	593,255	595,640	292,686	704,134
Oct.	656,021	661,009	301,782	522,090
Nov.	563,647	568,353	322,135	634,982
Dec.	551,113	549,913	246,460	1,110,983
Total (year)	7,397,784	7,403,726	.....	.....
1929				
Jan.	558,492	548,581	319,704	1,342,006
Feb.	567,398	563,532	345,365	1,198,481
Mar.	742,165	743,407	393,941	1,076,317
April	771,584	775,481	333,614	935,430
May	836,532	834,699	316,882	899,090
Tot., 5 mo.	3,476,171	3,465,700	.....	.....

Barrel Output Higher

Cleveland, July 2.—Barrels shipped by members of the Steel Barrel Manufacturers' institute, Cleveland, in May numbered 663,031, compared with 593,817 in April. Unfilled orders as of June 1 numbered 508,771, against 542,752 on May 1. May production of all classifications was 61.3 per cent of capacity.

Boiler Orders Higher

Washington, July 2.—New orders for 1749 boilers, aggregating 2,143,257 square feet, were placed in May, according to the department of commerce. This compares with 1706 boilers with 1,769,427 square feet in April and 1836 boilers with 1,661,173 in May, 1928. Totals for the five months of 1929 are 7038 boilers with 7,919,703 square feet, compared with 7280 boilers with 6,868,623 square feet a year ago.

Babbitt Sales Lower

Washington July 2.—May sales of babbitt for apparent consumption show a slight decrease from April, although consumption by producers gained in the same period. Figures for the first five months of this year compared with the same period of 1928 show an increase in apparent consumption of over 6,00,000, according to the department of commerce. Comparisons follow:

	Total apparent consumption	Sold by manufacturers	Consumption by producers
	(Figures given in pounds)		
1928			
May	4,606,899	3,578,422	1,028,477
Total, 5 mo.	23,776,074	18,684,230	5,091,844
June	4,731,023	3,625,347	1,105,676
July	4,692,825	3,816,707	938,955
August	4,755,662	3,843,680	911,982
September	5,308,403	4,309,004	999,399
October	5,796,419	4,605,179	1,191,240
November	5,630,417	4,356,670	1,273,747
December	4,985,942	4,148,601	837,341
Tot. (1928)	59,676,765	47,338,625	12,338,140
1929			
January	6,093,267	4,876,506	1,216,761
February	5,720,243	4,695,669	1,024,574
March	6,465,613	5,171,047	1,294,566
April	6,046,445	4,857,258	1,189,187
May	5,472,008	4,231,627	1,240,381
Total, 5 mo.	29,797,576	23,780,751	6,016,825

May Plate Orders Gain

Washington, July 2.—Orders for fabricated plates in May show a sharp gain over April and for the first five months a decided increase is shown over the same period of last year. The department of commerce comparison follows:

	Total	Oil storage tanks	Gas holders	Blast furnaces	Stacks and miscellaneous
1928					
May	42,487	14,852	4,744	202	17,768
Total 5 mos.	225,281	98,806	17,036	2,888	81,548
June	35,202	12,204	3,225	778	15,803
July	35,959	16,881	1,848	499	12,159
Aug.	47,245	24,807	1,814	429	17,579
Sept.	40,281	18,572	1,642	386	13,976
Oct.	53,983	23,960	1,861	2,435	17,480
Nov.	54,277	32,381	2,081	563	10,731
Dec.	36,254	14,217	2,216	655	12,060
(Year)	528,482	241,828	31,723	8,633	181,336
1929					
Jan.	32,705	11,055	2,013	325	11,567
Feb.	58,684	16,093	6,356	95	*18,468
March	57,869	22,045	5,656	631	*15,274
April	40,675	9,984	2,483	2,462	23,167
May	47,108	10,087	5,300	1,245	25,463
Total 5 mos.	237,041	69,264	21,813	4,758	93,939

Chicago for Long Week

Chicago, July 2.—All local building trades except union plasterers, lathers and painters, have negotiated new agreements specifying the 5½-day week. This year's contract has been negotiated to expire in 1933 and 1934 in an effort to avoid interruption of the world's fair building program.

River Shipments Less During May

Pittsburgh, July 2.—River shipments of iron and steel products in the Pittsburgh district declined slightly during May, according to United States engineer office here.

The movement over the Monongahela river was 88,340 tons, against 99,067 tons in April but a gain over the 86,722 tons for May, 1928. The Ohio tonnage declined from 105,472 tons in April to 102,162 tons in May. This compares with 112,818 tons a year ago. The Allegheny river movement continued small.

Shipments over the Monongahela for the first five months of this year totaled 444,784 tons, against 403,640 tons in the 1928 period. The Ohio aggregate declined from 448,504 in 1928 to 420,348 this year. The Allegheny tonnage of 760 compares with 3773 for last year.

Comparative monthly figures follow:

1929	Allegheny	Monongahela	Ohio
January	.....	80,402	48,471
February	.....	83,358	72,203
March	25	93,627	92,040
April	210	99,067	105,472
May	525	88,340	102,162
1928			
December	.....	79,595	78,213
November	800	143,238	137,019
October	1,130	131,281	130,808
September	200	136,227	125,062
August	50	109,738	124,066
July	.....	91.834	90,145
June	2,350	75,422	98,156
May	1,863	86,722	112,818
April	470	87,581	110,356
March	725	77,908	77,945
February	385	73,360	87,635
January	330	78,069	69,750
Total	8,303	1,160,975	1,239,973

Russia Places Large Tractor Order

New York, July 2.—The Russian government has placed orders for 6750 tractors and spare parts with the International Harvester Co. and Deere & Co. through the Amtorg Trading Corp. and Selskosljus, Inc., 165 Broadway, according to Saul G. Bron, chairman of Amtorg. Mr. Bron said 5900 tractors had been purchased from the International Harvester Co. and 850 from Deere & Co.

Part of the tractor order will be shipped next month for the current harvesting season, but the bulk will be shipped for use in the 1930 spring sowing.

Exports Lowest; Imports at Peak

Iron and Steel Shipments in May at Year's Extremes; Balance of Trade, However, Still More Favorable than Year Ago

EXPORTS of iron and steel products from the United States during May totaled 261,516 gross tons, thus falling short of the high figure set during April by 16,064 tons, states the iron and steel division, department of commerce. This drop, however, amounted to only 5.8 per cent of the previous month's shipments. Imports, on the other hand, rose rather sharply to reach the figure of 74,272 tons, the peak of the year's trade to date. This gain of 19,935 tons amounted to 36.7 per cent of the total April shipments.

IMPORTS AND EXPORTS
Gross Tons

	—1929—		—1928—	
	Imports	Exports	Imports	Exports
Jan.	54,793	274,296	58,635	205,766
Feb.	58,146	259,711	48,756	185,907
March	52,622	270,925	74,128	221,935
April	54,337	277,580	71,579	215,184
May	74,272	261,516	72,106	267,890
5 mos.	294,210	1,344,028	324,213	1,090,682
June	.....	.....	65,819	262,052
July	.....	.....	47,830	253,336
Aug.	.....	.....	69,914	287,297
Sept.	.....	.....	57,782	228,056
Oct.	.....	.....	63,880	256,870
Nov.	.....	.....	67,103	256,886
Dec.	.....	.....	55,199	221,810
Total	.....	.....	782,694	2,862,997

Both of the above noted changes in general trend were reflected in the average daily movements. The month's daily export average was only 8436 tons against the April average of 9253 tons and was thus the lowest figure for the year. The import average of 2396 tons contrasts with that of April, 1811 tons, and was the highest yet set in 1929.

Neither of the rather marked changes materially affected the trend of the cumulative trade. In all, 1,344,028 tons of iron and steel have been exported over the first five months of 1929, 247,433 tons or 22.6 per cent more than over this same period of 1928. The 1929 import figure of 294,210 tons, despite the increases shown in May, remains 33,276 tons less than that for 1928, a decrease of approximately 10.2 per cent.

The decrease in May export trade from the total reached during April was reflected in 23 of the 42 classes of products. The principal decreases were those registered in tin plate (11,454 tons), rails (10,870 tons), steel bars (7312 tons), welded pipe (3289 tons), galvanized sheets (3062 tons), and casing and oil line pipe (2165 tons). Increased sales included scrap (13,295 tons), plain structural shapes (9541 tons), skelp (3867 tons), and plates (2179 tons).

In point of tonnage the principal commodity exported during May was scrap, went chiefly to Japan, Canada, Poland and Italy. Plain structural shapes, plates and skelp were sent principally to Canada—all of the last named product going to that country. Steel bars went chiefly to Canada with Japan and the United Kingdom among those countries taking smaller amounts. Tin plate found its best markets in Canada, Japan, China, Mexico and Argentina. Black steel sheets were exported mainly to Canada and Japan, while galvanized sheets were sent principally to Canada, the Phillipine islands, Brazil and Mexico. Steel rails were taken chiefly by Canada and India.

Imports of iron and steel products were sharply increased during May over April, this gain being distributed quite generally throughout the entire trade with only 6 classes of products failing to show increases. Principal increases were those in pig iron

ORIGIN OF IRON ORE IMPORTS
Gross Tons

From	May	April
Sweden	22,723	33,485
Spain	13,048	.....
Brazil	8,800	.....
Canada	5	.....
Cuba	56,400	55,500
Chile	130,316	140,600
Algeria and Tunis	25,800	30,620
Egypt	8,000	14,300
Newfoundland	10,670	.....
Australia	.....	4,279
Greece	.....	5,350
Total	275,672	284,134

ORIGIN OF MANGANESE IMPORTS
Gross Tons

From	May	April
Soviet Russion in Europe	20,375	16,583
Brazil	6,851	8,468
Java and Madura	286	.....
British India	255	5,514
United Kingdom	.....	12
Total	27,767	30,577

ORIGIN OF FERROMANGANESE IMPORTS
Gross Tons

From	May	April
Sweden	17	18
Italy	172	229
Norway	52	2,823
United Kingdom	1,425	1,315
Canada	3,090	2,987
Total	4,756	7,372

ORIGIN OF PIG IRON IMPORTS
Gross Tons

From	May	April
Mexico	32	31
Germany	50	.....
Netherlands	2,916	1,053
Norway	228	391
Sweden	200	265
United Kingdom	6,342	3,000
Canada	36	127
British Malaya	275	.....
British India	4,314	1,826
Total	14,393	6,693

ORIGIN OF IMPORTS
Gross Tons

From	Ingots, blooms, etc.	Steel scrap	Cast iron pipe	Steel bars
Belgium	1,419	.....	716	1,304
France	859	112	6,003	309
United Kingdom	35	23	16	149
Germany	277	145	168	777
Sweden	271	139	.....	1,267
Canada	2	6,321	4	7
Netherlands	.....	13	.....	5
Italy	.....	84	.....	.....
Norway	.....	.....	.....	11
Czecho-Slovakia	.....	.....	.....	33
Austria	.....	.....	.....	50
Total	2,863	6,837	6,907	3,912

IMPORTS OF IRON AND STEEL PRODUCTS
(In Gross Tons)

Item	May 1929	April 1929	January through May 1929	January through May 1928
Pig Iron	14,393	6,693	62,065	63,496
Ferromanganese and alloys (1)	4,756	7,372	27,050	18,535
Ferrosilicon (2)	733	636	3,576	1,345
Ferrochrome (3)	121	20	220	262
Scrap	6,837	7,584	36,615	15,129
Steel ingots, blooms, billets, etc	2,863	2,610	10,712	9,816
Steel bars	3,912	3,437	15,102	44,576
Iron bars	222	299	1,311	933
Wire rods	2,778	1,339	7,260	8,298
Hoops, bands, and scrolls	5,039	2,664	11,433	12,536
Boiler and other plate	75	1,220	2,350	942
Sheets, skelp and sawplate	3,199	1,068	8,164	12,729
Tin plate	23	3	115	550
Structural shapes	14,744	12,300	56,833	74,404
Rails and splice bars	744	13	1,728	6,364
Cast iron pipe	6,907	1,778	19,595	28,992
Other pipe and tubes	4,170	2,565	18,024	18,282
Barbed wire	360	742	2,353	1,566
Round iron and steel wire	467	778	2,971	1,688
Steel telegraph and telephone wire	....	....	....	118
Flat wire and strip steel	346	160	941	1,073
Wire rope and strand	206	193	1,008	619
Other wire	77	47	264	277
Nails, tacks, and staples	1,099	549	3,461	3,155
Bolts, nuts, rivets, and washers	11	26	104	126
Castings and forgings	190	241	955	1,675
Total	74,272	54,337	294,210	327,486

(1) Manganese content. (2) Silicon content. (3) Chromium content.

(7700 tons), structural shapes (2444 tons), hoops and bands (2375 tons), and sheets (2131 tons). Of the decreases only two were in appreciable amount, the trade in ferromanganese dropping 2616 tons and that in boiler and other plate 1145 tons.

On a tonnage basis the major products were structural shapes, pig iron, cast iron pipe, scrap, hoops and bands, ferromanganese, and "other" pipe in order. The imported shapes came principally from Belgium, Germany, and France; the pig iron from the United Kingdom, India, and the Netherlands; the cast iron pipe principally from France; the scrap almost entirely from Canada; the hoops and bands from Belgium, Germany and France; the ferromanganese from Canada and the United Kingdom; with the bulk of the "other" pipe being received from Germany.

Germany was the principal source of imports during the month (15,579 tons), the bulk of her trade being made up of such items as shapes, "other" pipe and hoops and bands. Belgium also leaned heavily towards shapes and hoops and bands in her 13,577-ton trade, but with steel ingots and steel bars also in the roles of important factors. Nearly one-half of the French shipments of 12,281 tons was cast iron pipe with shapes the next principal product. More than 60 per cent of the Canadian total of 10,982 tons was scrap, with ferromanganese totaling nearly a third.

EXPORTS OF IRON AND STEEL PRODUCTS
(In Gross Tons)

Item	May 1929	April 1929	January through May 1929	January through May 1928
Pig iron, not including ferro-alloys	8,088	7,631	27,689	19,655
Ferromanganese and spiegeleisen	88	86	909	4,523
Scrap	55,916	42,621	206,904	186,213
Ingots, blooms, etc	6,704	6,441	20,852	9,544
Skelp, iron and steel	15,244	11,377	40,121	42,086
Iron bars	341	514	2,583	1,680
Steel bars	14,720	22,032	100,371	56,952
Alloy steel bars	974	1,501	10,469	6,216
Wire rods	3,197	4,551	20,286	13,711
Plates	20,185	18,006	89,656	57,197
Galvanized sheets	11,342	14,404	73,816	64,635
Black steel sheets	13,740	14,615	77,045	71,088
Black iron sheets	1,526	1,117	6,172	5,876
Hoops, bands and strip steel	6,233	8,059	36,583	22,877
Tin plate, terne plate, etc	14,537	25,991	118,080	102,823
Structural shapes, plain material	30,331	20,790	114,598	70,517
Structural shapes, fabricated	6,652	7,157	47,308	30,820
Metal lath	490	476	2,519	1,832
Steel rails	10,499	21,369	78,177	96,641
Rails, fastenings, switches, frogs, etc	2,318	3,408	13,824	25,576
Boiler tubes	1,613	1,565	8,274	6,957
Casing and oil line pipe	7,314	9,479	64,465	44,299
Black and galvanized welded pipe	8,327	11,616	56,212	43,477
Malleable iron screwed pipe fittings	701	1,151	5,148	3,494
Cast iron screwed pipe fittings	1,154	793	5,039	2,507
Cast iron pressure pipe and fittings	649	758	4,036	5,756
Cast iron soil pipe and fittings	926	919	4,603	5,998
Plain wire	3,518	4,146	22,348	19,015
Barbed wire and woven wire fencing	5,409	5,137	29,293	31,426
Wire cloth and screening	142	116	762	680
Wire rope	505	586	3,184	2,148
Insulated wire and cable	115	48	549	252
Other wire and manufactures of	961	785	4,774	3,615
Wire nails	513	1,355	7,006	7,307
Nails other than wire	482	1,069	4,138	3,812
Tacks	55	54	283	355
Horseshoes	8	6	138	179
Bolts, nuts, rivets, except track	1,234	1,281	6,921	5,219
Car wheels and axles	1,584	1,745	11,019	5,922
Iron castings	1,174	1,267	6,264	5,630
Steel castings	1,011	531	5,060	4,428
Forgings	996	1,027	6,550	3,677
Total	261,516	277,580	1,344,028	1,096,595

DESTINATION OF MAY IRON AND STEEL EXPORTS
Gross Tons

To	Rails	Galvanized sheets	Plate not fab.	Tin, terne plate	Black sheets	Barbed wire	Steel bars	Steel scrap
Argentina	.....	261	5	1,171	140	369	.....	.....
Brazil	58	1,401	46	470	.....	1,257	20	.....
Canada	3,690	2,810	18,291	4,051	9,532	283	9,802	11,273
Central America	104	430	10	.....	49	939	150	.....
Chile	206	78	232	48	245	.....	201	.....
China	.....	216	.....	1,421	308	.....	81	821
Colombia	363	383	.....	33	.....	166	167	.....
Cuba	639	276	23	372	.....	716	385	.....
Italy	.....	.....	.....	421	.....	.....	.....	10,399
Japan	2,047	29	166	2,310	1,643	.....	1,677	12,295
Mexico	39	1,146	53	1,228	254	.....	61	783
Philippines	538	1,508	.....	366	5	107	670	129
Peru	120	.....	9	43	22	.....	59	.....
United Kingdom	.....	.....	.....	.....	83	.....	1,077	840
Venezuela	50	.....	.....	5	.....	178	.....	.....
Europe	.....	760	230	1,288	1,093	.....	20	.....
Total	10,499	11,342	19,557	14,537	13,740	4,822	14,720	55,916

Miscellaneous, in tons: To Australia, 249 of black sheets, 287 of plates, 104 of galvanized sheets; to British India, 1000 of steel rails and 553 of tin, terne plate; to Germany, 4286 of rails; to British South Africa, 45 of wire and 6 of galvanized sheets; to Poland, 11,069 of scrap; to Malta, 3928 of scrap; to Turkey-in-Asia, 257 of tin and terne plate; to Norway, 96 of galvanized sheets; to Egypt, 257 of tin, terne plate; to Uruguay, 48 of tin, terne plate; to British Malaya, 5 of tin, terne plate and 379 of galvanized sheets.

DESTINATION OF IRON, STEEL EXPORTS
(In gross tons)

Country of Destination	May, 1929	January through May, 1929	January through May, 1928
Cuba	5,031	31,728	25,902
North and Cent. America and West Indies	150,930	675,302	526,167
Canada and Newfoundland	134,559	558,558	434,287
Cuba	5,031	31,728	25,902
Guatemala	472	3,492	5,297
Honduras	636	5,991	3,522
Mexico	6,870	35,209	31,824
Panama	1,170	9,181	7,061
Salvador	184	3,979	1,217
British West Indies	471	10,723	3,357
Other West Indies	998	12,257	10,451
Other Central America	539	4,184	3,249
South America	21,421	188,295	184,068
Argentina	5,700	45,367	39,372
Brazil	4,322	28,835	39,677
Chile	2,930	28,962	34,147
Colombia	2,354	22,007	29,517
Peru	829	15,307	11,057
Uruguay	288	5,067	3,657
Venezuela	4,263	40,124	23,808
Other So. America	735	2,626	2,838
Europe	42,079	161,053	107,845
Belgium	80	1,635	6,404
France	783	8,290	1,962
Germany	4,412	11,958	11,258
Italy	12,945	53,937	30,639
Netherlands	193	1,346	1,151
Poland and Danzig	11,075	40,356	23,046
Rumania	232	1,623	1,271
Soviet Russia in Europe	88	1,953	1,402
United Kingdom	5,595	25,856	21,503
Other Europe	6,675	14,099	9,209
Far East	45,296	310,536	272,256
British Malaya	517	4,323	3,281
China	3,321	36,764	50,666
Netherlands E. Indies	1,798	33,552	11,135
India and Ceylon	1,809	9,806	12,194
Japan	29,661	159,184	141,185
Kwantung	118	7,262	2,905
Philippine Islands	5,031	41,973	40,777
Australia	1,734	8,854	5,991
New Zealand	704	2,569	952
Other Asia and Far Eastern Markets	603	6,249	3,170
Africa	1,790	8,842	6,259
Union of South Africa	817	3,164	2,792
Egypt	533	4,095	2,461
Mozambique	436	816	320
Other Africa	4	767	686

Exports of Metalworking Machinery
(In number except where otherwise specified)

	May 1929	May 1928	January through May 1929	January through May 1928
Engine lathes	54	63	382	332
Turret lathes	25	60	248	186
Other lathes	105	41	407	308
Vertical boring mills and chucking machines	34	17	131	51
Thread-cutting and automatic screw machines	73	63	395	357
Knee and column type milling machines	24	22	198	128
Other milling machines	32	34	301	255
Gear-cutting machines	42	43	207	154
Vertical drilling machines	27	25	179	220
Radial drilling machines	14	10	54	65
Other drilling machines	160	72	841	323
Planers and shapers	33	24	213	183
Surface grinding machines	21	....	61	.....
External cylindrical grinding machines	47	75	365	384
Internal grinding machines	47	51	209	195
Tool grinding, cutter grinding, and universal grinding machines	95	80	674	264
Pneumatic portable tools	2,176	1,704	10,619	9,150
Chucks for machine tools	1,028	1 330	7,669	5,111

British Firms Negotiating Merger

Vickers, Armstrong Whitworth, and Cammell Laird May Be Included—Pig Iron Scarce—Steelworks Busy—Railmakers Renew Price

European Headquarters,
IRON TRADE REVIEW,
Caxton House, Westminster, S. W.1

LONDON, July 2.—(*By Cable*)—Brown-Firth interests are negotiating a merger with the English Steel Corp., to include Vickers Ltd., Sir W. G. Armstrong, Whitworth Co., and Cammell Laird & Co.

Pig iron supplies continue scarce in the British market, with the majority of furnaces sold three to four months ahead. Hematite is more plentiful. Barrow steel mills are working steadily, but new orders are lacking. Middlesbrough steelworks are busy, and the outlook is good. Those in the Birmingham district want orders.

Staffordshire bar iron trade is in strong position. Birmingham works have obtained orders for freight cars for delivery to South Africa. Demand for tin plate is strong, continental users purchasing. Galvanized sheets are easy. An order for a 16,000-ton oil tanker has been placed by a Denmark interest with the Furness company at Middlesbrough.

A report from Brussels states iron and steel market activities are slowing up, and prices are falling. German mills are offering semifinished steel. American competition is encountered in the Far East.

Berlin reports export demand good, and large sales of semifinished steel. The International Rail association has renewed prices for third quarter.

Heavy Sales Bring British Pig Iron Shortage

BIRMINGHAM, Eng., June 21.—Scarcity of pig iron continues acute in the Middlesbrough district and consumers have booked considerable tonnages with Northampton furnaces and Birmingham merchants. The latter especially have been glad to take this business. The furnacemen have sold their output in Northampton and Derbyshire over third quarter and are not prepared to make further commitments in view of the possibility of an increase in price. There is already talk of an advance of 2s 6d ($0.60) in Midland irons, much to the disappointment of the merchants, who consider that the

Sterling $4.85

buying movement would receive a check. Producers, however, are aware that Cleveland ironmasters are now taking orders at 2s 6d ($0.60) more. The shortage is not likely to be relieved for some time owing to difficulty in obtaining adequate supplies of coke. The output has not kept pace with relighting of furnaces and although supplies have been ensured for furnaces now active owners are not desirous of pushing ahead with smelting unless assured coke supply.

A hopeful factor of the British pig iron business is the recovery of exports. Little iron is being imported. Instead the Continent is now taking heavy consignments and between 5000 and 6000 tons were dispatched to the United States last month. On the other hand reports from Middlesbrough this week state that shipments for the month so far are low as compared with May. Hematite is fairly plentiful and prices are steady as the increase in output has been sufficient to meet current needs. The position is unchanged on the west coast where the twelve furnaces are sufficient for the market and

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, July 1	*British* Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
Export Prices f. o. b. Ship at Port of Dispatch—By Cable								
PIG IRON	£ s d		£ s d		£ s d		£ s d	
Foundry No. 3, Silicon 2.50-3.00	$17.58	3 12 6*	$17.46	3 12 0	$17.46	3 12 0	$17.46	3 12 0
Basic	16.61	3 8 6	17.10	3 10 6	17.10	3 10 6	16.73	3 9 0
Basic-bessemer	17.58	3 12 6†	17.10	3 10 6	17.10	3 10 6	16.73	3 9 0
Hematite, Phosphorus 0.02-0.05	17.95	3 14 0	24.63	630*	.....	.....	17.70	3 13 0
SEMIFINISHED STEEL								
Billets	$32.13	6 12 6	$25.95	5 7 0	$25.95	5 7 0	$26.19	5 8 0
Wire rods	41.83	8 12 6	30.92	6 7 6	30.92	6 7 6	30.92	6 7 6
FINISHED STEEL								
Standard rails	$37.59	7 15 0	$31.53	6 10 0	$31.53	6 10 0	$31.53	6 10 0
Merchant bars	1.79c	8 5 0	1.29c	5 17 3	1.29c	5 17 3	1.32c	6 0 0
Structural shapes	1.60c	7 7 6	1.15c	5 4 9	1.15c	5 4 9	1.14c	5 4 0
Plates, ship, bridge and tank	1.76c	8 2 6	1.40c	6 7 3	1.40c	6 7 3	1.39c	6 6 0
Sheets, black, 24 gage	2.17c	10 0 0	2.37c	10 15 0	2.37c	10 15 0	2.33c	10 12 0
Sheets, galvanized, 24 gage, corrugated	2.96c	13 12 6	3.01c	13 13 9	3.01c	13 13 9	3.08c	14 0 0
Bands and strips	2.17c	10 0 0	1.39c	6 7 6	1.39c	6 7 6	1.40c	6 7 6
Plain wire, base	2.06c	9 10 0	1.65c	7 10 0	1.65c	7 10 0	1.71c	7 15 0
Galvanized wire, base	2.93c	13 10 0	2.12c	9 12 6	2.12c	9 12 6	2.15c	9 15 0
Wire nails, base	2.39c	11 0 0	1.76c	8 0 0	1.76c	8 0 0	1.16c	5 5 0
Tin plate, base box 108 pounds	$ 4.49	0 18 6	.....	.....	.....	.....	$ 8.97	1 17 0
*Francs								
Domestic Prices at Works or Furnace—Last Reported			Francs		Francs		Marks	
Foundry No. 3 Pig Iron, Silicon 2.50-3.00	$16.98	3 10 0	$18.57	475(2)	$17.24	620	$20.26	85
Basic pig iron	16.61	3 8 6	19.94	510(1)	17.10	615	21.69	91
Furnace coke	3.64	0 15 0	6.26	160	5.84	210	5.12	21.50
Billets	32.13	6 12 6	24.24	620	25.72	925	28.83	121
Standard rails	1.79c	8 5 0	1.46c	810	1.63c	1,250	1.51c	140
Merchant bars	1.84c	8 10 0	1.36c	755	1.37c	1,055	1.52c	141
Shapes	1.76c	8 2 6	1.26c	700	1.23c	945	1.49c	138
Plates, ship, bridge and tank	1.93c	8 17 6‡	1.54c	855	1.46c	1,125	1.71c	158
Sheets, black, 24-gage	2.28c	10 10 0	2.92c	1,620	2.73c	2,100	2.43c	225
Sheets, galvanized 24 gage, corrugated	2.96c	13 12 6	3.69c	2,050	3.84c	2,950	3.78c	350
Plain wire	2.06c	9 10 0	1.94c	1,075	2.15c	1,650	2.48c	230
Bands and Strips	2.17c	10 0 0	1.51c	840	1.69c	1,300	1.77c	164

*Middlesbrough; †Scotch foundry iron; ‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 15s 0d ($3.64) f. o. b. Ferromanganese £21 13s, 0d ($105.00) delivered Atlantic seaboard, duty-paid. German ferromanganese £15 0s 0d ($72.75) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel; French, Belgian, Luxemburg, and German are for basic-bessemer steel.

prices are firm with an occasional premium demanded for prompt delivery. Steelmakers at Barrow, however, have declared an advance of 5s ($1.21) in steel rails in view of the increase in production costs.

The tone of the market for semi-finished and finished steel at Birmingham is considered exceptionally vigorous for the season. Merchants have had large offers of continental material within the past few days but prices quoted do not leave sufficient margin to be attractive except in the case of Belgian nut and bolt making iron for which there is steady demand. Nevertheless imports for the whole country are higher than a year ago, which may be taken as an indication of buying in other centers near the ports. South Wales it is known is still buying a good deal of foreign sheet bars and tin plate bars, whereas Birmingham merchants find little or no demand for these since there is a difference of only 2s 6d ($0.60) after delivery charges have been added.

Heavy steel mills have good order books although new business is quiet. Factories in the Birmingham district are still busy although the peak of production was passed at Whitsuntide for the industry is not as seasonal as formerly. All the British colonies are good customers and this overseas trade helps activity at works the year round.

Staffordshire makers of finished iron are able to maintain regular operations at forges and mills and have not advanced prices in spite of the increase in production costs. Iron strip has been steadily advancing for some time and is now quoted at £11 ($53.35) per ton.

The scrap scarcity has been considered sufficiently serious to warrant an inquiry by the board of trade and the first meeting was held this week. Since the year opened over 214,000 tons of scrap have been despatched from British ports and shipments increased from 34,000 tons in April to 62,000 tons in May. Some people are calling for a restriction order on exports owing to difficulty of getting supplies at home. Naturally prices have been high and still range from £3 17s 6d ($18.80) to £4 ($19.40) delivered South Wales although the scarcity is not as acute as a month ago.

A steady business is being done in galvanized sheets, sufficient to keep mills operating fully and prices range from £13 12s 6d ($66.08) to £13 15s ($66.68). The minimum price arrangement which has been in operation since 1927 has been abandoned but it is not expected this will be followed by sensational cutting of prices. Production costs are too heavy to allow such steps. Exports increased from 66,035 tons in April to 71,723 tons in May, in spite of the fact that India, the chief consuming country, took 10,000 tons less and is said to have her warehouses much overstocked.

More coal was shipped as foreign cargo from South Wales in May than in any month for the two years. Last month's total of 2,123,883 tons compared with 1,966,071 tons in April, an increase of 157,812 tons, and with an aggregate of 2,232,650 tons in May, 1927.

British Output High

London, June 17.—(*European Staff Service*)—Production of pig iron in May was the highest reached since May, 1927. The output in May this year included 203,400 tons of hematite, 285,800 tons of basic, 119,300 tons of foundry and 22,200 tons of forge pig iron.

Output of steel ingots and castings in May was the highest since March.

The following table gives figures for the first five months of 1929, as compared with the monthly averages of the three preceding years and 1913, in gross tons:

Mon. ave.	Act. Fur. on last day	Pig iron	Steel ingots and castings
1913	*338	855,000	638,600
1926	78	204,800	299,700
1927	149	607,700	758,100
1928	132	550,900	710,400
1929			
Jan.	139	563,900	764,600
Feb.	140	519,600	774,900
March	145	590,500	859,900
April	152	611,300	808,600
May	159	654,800	840,400

*Average for year.

French Make Much Coke

Paris, June 17.—(*European Staff Service*)—The output of coke at French collieries during April was slightly below the record of 411,328 tons in March. Imports of coke in April were the highest since May, 1928, when the figure was 526,593 tons. April imports included 353,012 tons from Germany, 96,794 tons from Holland, 57,899 tons from Belgium and 1663 tons from Great Britain. The following table gives comparisons in metric tons:

Mon. ave.	Production	Imports	Exports
1913	335,620	255,835	17,085
1926	313,950	462,915	39,320
1927	339,015	395,580	33,430
1928	366,660	447,330	34,810
1929			
Jan.	384,519	438,059	37,443
Feb.	360,182	400,848	34,165
March	411,328	419,478	22,941
April	394,392	503,473	34,557

British Exports Larger

London, June 17.—(*European Staff Service*)—May showed a distinct improvement in British exports of pig iron and steel, the tonnage of pig iron and ferroalloys exported being much the largest in several years. Exports of other iron and steel products in were the highest for the year. Among the principal articles exported in May were: 50,588 tons of plates and sheets, of which 10,390 tons went to the Argentine Republic; 71,723 tons of galvanized sheets, of which the highest quantity, amounting to 17,727 tons, went to India; 57,684 tons of tinned and terne plates, shipments of which were well divided between all markets of the world; 33,173 tons of wrought iron pipe; 46,239 tons of rails and track material, of which 15,748 tons went to the Argentine republic.

Imports of iron and steel into Great Britain in May showed a decline. Among the principal articles imported were: 55,880 tons of blooms, billets and slabs, of which 28,989 tons came from Belgium; 12,569 tons from France and 10,398 tons from Germany; 35,565 tons of sheet bars and tin plate bars, of which 32,163 tons came from Belgium.

The foregoing figures exclude scrap. The following table gives figures for the first five months of 1929, compared with the monthly averages of the three preceding years, in gross tons

	IMPORTS		EXPORTS	
Mon. ave.	Pig iron and ferroalloys	Other iron and steel	Pig iron and ferroalloys	Other iron and steel
1926	41,015	270,450	26,105	222,890
1927	50,715	316,455	27,580	322,100
1928	9,935	231,390	37,895	317,210
1929				
Jan.	13,034	231,233	49,408	371,783
Feb.	8,662	151,373	48,609	331,466
March	8,731	173,376	44,701	305,437
April	9,203	252,729	46,718	293,086
May	7,637	249,619	68,141	374,633

German Demand Quiet

Berlin, June 10.—(*European Staff Service*)—The report of the A-products union for May states that export orders for semifinished steel slightly subsided, but prices remained firm. The volume of domestic trade was the same as in April. Demand for structural steel increased, owing to seasonal influences; foreign orders were considerable and prices hardened. Occupation of works manufacturing railroad track material was satisfactory. The merchant bar syndicate's report stated that there was little change in the home market. From export markets the demand was satisfactory, although relatively calm. Prices remain firm. Quiet conditions were reported by the hoop and band syndicate, but toward the end of the month the volume of inquiries showed a tendency to increase. The plate syndicate reported quiet conditions at home, but a number of important contracts from foreign sources.

It is announced that a syndicate for the sales of light-gage sheets has been formed as from June 1. The head office of this syndicate is at Cologne.

German Exports Growing

Berlin, June 17.—(*European Staff Service*)—Exports of iron and steel from Germany during April were the highest for the year and exceeded all monthly figures for 1928. Principal articles exported in April were: Merchant bars, hoops and bands, 159,137 tons; semifinished steel, 68,157 tons; wire and wire rod, 65,262 tons; plates and black sheets, 56,849 tons; rails and track material, 44,207 tons; forged tubes, 41,749 tons; various forgings, 21,569 tons. The tonnage of scrap exported was 14,758 metric tons.

Among principal articles imported were: Merchant bars, hoops and bands, 56,448 tons; rails and track material, 12,068 tons, the tonnage of other articles being less than 10,000. Scrap imported was 34,424 metric tons. The following table gives figures for the first four months of 1929, compared with monthly averages of the three preceding years, in metric tons:

	IMPORTS		EXPORTS	
Mon. ave.	Pig iron	Other iron and steel	Pig iron	Other iron and steel
1926	9,230	95,890	42,730	402,905
1927	23,895	217,505	29,910	347,645
1928	25,535	174,250	24,585	194,575
1929				
Jan.	22,334	154,293	31,820	387,769
Feb.	10,595	101,257	20,861	320,461
March	12,394	112,161	27,090	319,172
April	12,729	141,971	35,904	533,566

Here and There in Industry

Timely Information Which Records Developments in Various Lines of Productive Enterprise

FREYN ENGINEERING CO., Chicago, has been given a contract for eight pressure burners of its design to be installed on two blast furnaces for the Youngstown Sheet & Tube Co. Four will be placed on No. 4 furnace at Campbell works and the remaining four on No. 5 furnace at the South Chicago works. The Youngstown company made its first installation of this type of pressure burner two years ago. The Freyn company also has sold its stock line recorders to the Duquesne works of Carnegie Steel Co., Sparrows Point works of Bethlehem Steel Co., South Chicago works of Illinois Steel Co. and Wisconsin Steel Works of International Harvester Co. The company has taken a contract to design and erect a waste heat boiler at the plant of the Timken Roller Bearing Co. at Canton, O. This is to be of firetube type with 5200 square feet of heating surface. It will utilize the waste gases from a 100-ton open-hearth furnace. Similar waste heat boilers have been ordered by Youngstown Sheet & Tube Co. for its Indiana Harbor works, in connection with three 250-ton open-hearth furnaces. These boilers have 7500 square feet each of heating surface.

* * *

VAN LOON PATTERN WORKS, Anderson, Ind., began operating under the name of the Wandtke Pattern & Foundry Co. July 1. The company is located in a new and larger plant at 1700 Ohio avenue.

* * *

SURFACE COMBUSTION CO., Toledo, O., has opened a district sales office at Kansas City, Mo., with W. H. Kay in charge. The office will cover Kansas, Nebraska, Wyoming, Colorado, Utah, Missouri, except St. Louis, and part of Texas.

* * *

TODD SHIPYARDS CORP., New York, after experimentation, has decided to begin the manufacture of equipment for pulverizing coal for use on ships. Experiments on ocean vessels have indicated successful application of this fuel.

* * *

IRONTON FIRE BRICK CO., Ironton, O., has elected E. F. Myers president and treasurer, W. P. Lewis and C. E. Bales vice presidents, and W. D. Lewis secretary. Directors include W. P. Lewis, G. P. Mahl, W. F. Marting, E. F. Myers, J. R. Paul, J. F. Scherer and O. H. Schweickart.

* * *

CARNEGIE STEEL CO., Pittsburgh, has contracted with the Penn Engineering Works, New Castle, Pa., for the design and construction of a 1500-ton hot metal mixer for its works at Mingo Junction, O. Two of the same size already have been installed at the Ohio Works of the Carnegie company in Youngstown, O.

* * *

MARION STEAM SHOVEL CO., Marion, O., has appointed Gesner Contractors' Equipment Co., New Haven, Conn., exclusive sales representative in Connecticut. The Marion company has appointed the Contractors' Equipment & Supply Co., Philadelphia, its representative for new machinery and repairs.

* * *

PRATT & WHITNEY AIRCRAFT CO. will triple capacity of its plant on completion of work now under way at East Hartford, Conn. Output for the year will total close to 2000 motors, that for June being 220 Wasp and Hornet motors. Orders now on books total more than $9,000,000, according to Frederick B. Rentschler, president.

* * *

SNAP-ON WRENCH CO., 1270 South Pierce street, and the Blue Point Tool Co., 317 Mineral street, also Milwaukee, the officers of which control both concerns, are about to be consolidated and a new plant erected for their joint use. The two companies together now employ 250 workers, and in the new shop payroll will be nearly doubled at once.

* * *

CONTINENTAL CAN CO. INC. has acquired the assets and business of the Federal Can Co., Nashville, Tenn., manufacturer of a general line of cans for packing purposes. Acquisition of this company opens territory not previously served by Continental Can Co., which had no plants between Cincinnati and New Orleans. W. D. Trabue, who has aided in development of the Federal Can Co. since 1919, becomes a part of the organization of the Continental Can Co. Inc.

* * *

ERIE METER SYSTEMS INC., Erie, Pa., manufacturer of gasoline measuring devices, has bought the former plant of the Erie Motor Truck Co., at Wesleyville, a suburb of Erie. L. A. and N. A. Carlson own the company.

* * *

OHIO SEAMLESS TUBE CO., Shelby, O., has approved plans for an increase of 40 per cent in plant capacity to meet increased demand from automobile and aviation industries. Buildings and equipment included in this program will cost close to $400,000. The additions are expected to be in production in 90 days. The company has been running eight to 12 weeks behind in deliveries.

* * *

BORST ENGINEERING CO., recently incorporated at Buffalo by Andrew J. Borst, is in partial production, having leased the plant formerly occupied by the American Aluminum Co., 1097 Niagara avenue. Rubber cushioned spring shackles for all makes of automobiles will be the company's only product. New equipment is being installed. The company is inquiring for multiple drill presses and other automatic machinery.

* * *

MEURER STEEL BARREL CO. INC., Long Island City, N. Y., has moved its general offices to its new plant at 105 Avenue L, Newark, N. J. This plant has a capacity of 4000 barrels per day and is one of the largest in the country devoted to this line of production. Proximity to the vehicular tunnel into New York and switching service of the Central Railroad of New Jersey assures prompt movement of its product to consumers.

* * *

AMERICAN CARBURETION CO., which recently established an experimental and development laboratory in Milwaukee, is considering establishment of a production unit for the manufacture of aircraft engine equipment. The company is affiliated with Schofield-Miller Inc., Los Angeles, builder of power boat engines and racing automobiles. F. E. Keeler, Los

Angeles, formerly president of the Lockheed Aircraft Co., is a principal stockholder in both concerns.

* * *

BANTAM BALL BEARING CO., South Bend, Ind., has taken a 60-foot addition to its plant. A number of machine tools will be required for the extension. The addition and equipment is to cost about $30,000.

* * *

BUDA CO., Harvey, Ill., has let a contract to the Austin Co., Cleveland, for an inspection and storage building at its main plant, one story, steel construction. L. M. Viles is president.

* * *

JONES & HERNANDEZ FOUNDRY & MACHINE CO., Birmingham, Ala., has built a new shop on Avenue A between Thirty-eighth and Thirty-ninth streets, 75 by 150 feet, for the manufacture of about 2500 soft drink bottle coolers per month. Black and galvanized sheets have been purchased from Tennessee Coal, Iron & Railroad Co. and angles from the Connors Steel Co.

* * *

BRIGGS & STRATTON CO., Milwaukee, is showing a heavy increase in engine business over last year, according to Stephen W. Briggs, president. Shipments for five months were 15,866 units, compared with 9943 in the same time in 1928. The company is redesigning its entire engine line to increase power. The present engines range from ½ to 2½ horsepower, for use with washing machines, lawn mowers, garden tools, water pumps and sprayers.

* * *

TAYLOR-WINFIELD CORP., Warren, O., welding machinery and devices, has opened a branch office at 2857 East Grand boulevard, Detroit, in connection with the offices of its representative, the Denton & Anderson Co. A stock of spot and butt welders and replacement parts will be available for immediate delivery. M. L. Eckman, welding engineer, formerly with Ford Motor Co., is associated with the Denton & Anderson Co. at its Detroit office.

* * *

UNION CHAIN & MFG. CO., Sandusky, O., has opened a sales office at Third and Plum streets, St. Louis, in charge of Hugh Scott. It also has opened an office at 1535 Naomi street, Indianapolis, in charge of A. R. Young. The Union Chain & Mfg. Co. through recent merger with the American High Speed Chain Co., formerly of Indianapolis, is offering a complete line of power transmission, elevating and conveying chains.

Pig Iron Duty of $3 Per Ton Is Asked

(*Concluded from Page* 54)

which is being asked for by the institute.

A statement was filed with the committee on behalf of Senator Oddie who is not in Washington now. The brief supported his amendment on manganese which he introduced before congress.

Dr. J. A. Mathews, vice president, Crucible Steel Co., New York, asked the committee for an increase in the duty on fine alloy and crucible steels as provided for in paragraph 304 of the house bill. He asked for stepped-up rates on a sliding scale of from 20 to 35 per cent. During the testimony of Dr. Mathews he was severely cross examined by Senator King, of Utah, a member of the subcommittee, as to the financial standing of the Crucible company.

Dr. Mathews said that domestic production of manganese and tungsten had been fostered during the war and after it to see if a domestic industry could be built up. He did not go on record as to the manganese tariff further than to say that he would "hate to see the domestic producers go out of business."

The witness urged that the rates on carbon steel of a value of 2½ cents a pound and upward be raised proportionately so that the higher the declared value the higher would be its specific duty. This is because in general, he said, the higher priced carbon steels represent more labor and investment and relatively smaller quantities of the product are produced.

G. H. Weiler, representing the Forging Manufacturers' association, New York, talking on steel forgings, said that the present duty provided for in the house bill is at 6/10 of 1 cent per pound and he asked that a duty of 2 cents per pound be levied on forgings valued up to 6 cents per pound.

C. Frank Schwep, Ingersoll-Rand Co., New York, testifying on hollow drill steel asked that the committee levy a duty of 3 cents per pound on hollow drill steel, which would be 1 3/10 cents per pound more duty than that provided for in the house bill. This was for drill steel valued at above 4 cents per pound.

W. D. Thomas, appearing on behalf of 16 importers of fine steel of New York, said that the 8 per cent additional ad valorem duty placed on alloy steel should be eliminated. He told the committee that the higher priced steels which he imports are not competitive in price with the American product and some of it is not manufactured in the United States at all. He told the committee that some of the steel which he imports is worth $800 a pound and it is dutiable at $200 a pound.

Leon O. Hart, Driver-Harris Co., Harrison, N. J., addressed the committee on wire, and nickel alloys, and asked the committee for a change of classification in paragraphs 316 and 390. The reason for the change in classification of hot or cold worked nickel or nickel alloy products, he said, is that the percentage of the total cost represented by labor is very much larger for the finer sizes than for the heavier sizes. A graduated scale, he said, is necessary to afford the same relative degree of protection to the finer sizes.

Frederick Schwertner, Seamless Steel Equipment Corp., New York, importer of reaction chambers, told the committee that the United States needs foreign competition to help develop the art. He said that the house had raised the duty on reaction chambers from 25 to 40 per cent and he asked that the committee keep the duty at not over 40 per cent.

A. C. Dinkey, Midvale Co., Philadelphia, domestic manufacturer of reaction chambers, asked the committee to raise the rate from 40 to 60 per cent.

F. S. Russell, president, United States Pipe & Foundry Co., Burlington, N. J., filed a brief asking for a specific rather than an ad valorem duty on cast iron pipe, without specifying a rate. Herbert Kennedy, importer of cast iron pipe, New York, protested any increased rate, saying domestic producers were in good financial shape. Walter Wood, president of R. D. Wood & Co., Philadelphia, proposed a specific duty of ¾ cent per pound on cast iron pipe instead of 30 per cent, as provided in the house bill.

Canada Rewrites Tariff

Toronto, Ont., July 2.—The advisory tariff board, sitting at Ottawa, Ont., is digesting testimony taken at the tariff hearings last fall and is rewriting and consolidating tariff schedules in preparation for the next session of parliament. Structural steel has been given particular attention. A committee composed of tariff experts, representative of producers of structural steel and of fabricators is endeavoring to ascertain whether Canadian mills could supply the increasing demand for structural material in case the tariff was increased. Final action at Washington on the United States tariff may have a distinct bearing on the Canadian situation.

Machinery

Buying Continues Active with Demand Well Spread—No Large Lists Outstanding—Deliveries Improved in Some Instances

GRINDING machinery continues to be one of the most active features of the machinery market, airplane engine builders taking considerable of this equipment. A seasonal spurt in marine engine building is reflected also in this trend. Sales in most districts have not declined from the active rate which has been noted for the past 2 or 3 months, most dealers reporting that June volume of business held up to that of May. Diversification appears to be the keynote of present demand and no large lists are outstanding. A slight recession has been reported in the Chicago district, due probably to the reduction in sales to tractor works. This slackening has allowed dealers to get caught up on delivery schedules and shipments are greatly improved.

New York, July 2.—Machine tool buying continues in heavy volume and well spread. Most dealers and builders report June a better month than May. Expected lull has not developed and while in the automotive field there has been a decline, the falling off has not been sharp as in other seasons. Aviation engine builders are among the most active purchasers of equipment, the result largely of expansion programs and a general speeding up of production schedules. Three of the leading interests during the last 10 days have bought grinders, lathes, drills and other equipment, totaling more than 25 units. The list out for a new plant at Baltimore remains unplaced. Little progress has been made in reducing delivery, although makers of machinery have keyed up production schedules to the limit of present plants. Several are building plant additions. Prices appear to have steadied after several recent slight advances.

Grinding machinery is selling in large volume, especially to aviation motor interests. Activity of marine engine builders is also reflected in the demand for this equipment. Builders of machine motors have heavy advance orders on the books. Makers of ball bearings have booked orders from machine plants and are operating at capacity. A maker of automobile gears in the middle west bought six grinders of various types this week. Radial drills on inquiry are numerous. Part of the equipment for a machine shop for the Nichols Copper Co. has been placed. Delivery of boring machines is not promised before December by one interest. Railroads are buying a few tools, but have not been normally active.

Pittsburgh, July 2.—Machine tools sales as yet have not declined from the active rate that has prevailed for a number of weeks, and the current rate of inquiry indicates that considerable business will be pending during July and August. Demand continues well diversified although the railroads have no large lists outstanding. Pennsylvania railroad is inquiring for a grinder. Westinghouse Electric & Mfg. Co. is preparing to issue inquiries for tools on its third quarter list; practically all equipment has been placed on its second quarter list. Only a few tools are pending for steel mills in this district. Considerable business still is pending in the crane market. Recent awards include two 10-ton cranes for the new seamless tube mill at McKeesport, Pa., for the National Tube Co., awarded to Alliance Machine Co.

Worcester, Mass., July 2.—June production of machinery and machine tools in this district outstripped May volume in some instances while in others the high marks previously noted were maintained. Grinding machinery showed a sharp upward trend while wheels remained normally active. No weaknesses have developed in the small tool field where deliveries are delayed 6 to 8 weeks. Third quarter outlook is for continued peak production on the present firm price basis.

Chicago, July 2.—June volume of machine tool sales in this district probably was 15 to 25 per cent below May, Several houses sorely feel the reduction in sales to tractor works, particularly those dealers whose sales in recent months to tractor manufacturers have comprised about 60 per cent of the total volume. International Harvester Co. has postponed action on its program of machine tool buying for the Farm-All tractor works, Rock Island, Ill., for 3 or 4 weeks. Santa Fe railroad has purchased three shapers and a number of other tools, and the Rock Island has issued further inquiries for grinding equipment and several smaller machines. Western Electric Co. has extensive programs in hand, and has purchased machine tools for delivery in January and February, 1930. It is understood 18 machines will be purchased soon for the Hawthorne works here, and some tools for its Kearny, N. J., works. Much equipment was purchased here also for that company's new Baltimore cable plant. Machine tool builders are catching up on shipments. Minimum delivery promises for several lines of shapers and lathes are 45 days. Planers are in similar position. Deliveries of 4 to 6 weeks can be made on radial drills. Shipments of milling machines and presses are much relieved. Sales are encouraging among tool and die makers and general machine shops in the Chicago district, and a good volume of business has been placed in southern and central Wisconsin territory. A Beloit, Wis., manufacturer has a list pending. Prices remain steady.

Cleveland, July 2.—Machine tool sales continue at the current high rate. One dealer reports June sales approximately 15 per cent better than in May. Overselling of plant capacity still holds back deliveries, maximum production failing to relieve the situation. Demand is spread over a wide range of users with smaller orders featuring the market. Foreign inquiries furnish a good share of business. The outlook for third quarter, while not sharply defined, forebodes somewhat of a recession, although not sufficient to cause any dismay. An increase in replacement buying is predicted. A few scattered price advances have been announced.

CRANE ORDERS PLACED

Forty-seven hoists, including thirty-one 1-ton and sixteen 2-ton, for Chesapeake and Ohio Railway Co., to American Engineering Co.

Eight 25-ton diesel-equipped locomotive cranes for Baltimore & Ohio railroad, to Industrial Brownhoist Corp.

Two 10-ton electric cranes for National Tube Co., McKeesport, Pa., to Alliance Machine Co.

Among single orders placed were: 20-ton overhead electric crane for Phoenix Utility Co. to Box Crane & Hoist Corp.; remodeling of bridge crane with auxiliary hoist at Yonkers, N. Y., to Roeper Crane & Hoist Works.

May Crane Orders Top April Bookings

New York, July 2.—Shipments, new orders and unfilled orders for cranes increased in May as compared with the previous month, according to the Electric Overhead Crane institute. Value of this equipment made a corresponding increase.

During May shipments were 134 units with a tonnage capacity of 1485½ as compared with 107 units of a 1303½-ton capacity in April. New orders also increased, 181 with a tonnage capacity of 2008, against 149 with a tonnage capacity of 1484¾ the previous month.

Unfilled orders at the end of May were 488 with a tonnage capacity of 7538¼. In April unfilled orders included 462 units with a capacity of 7073¼ tons.

Value of May shipments was $1,122,014.90 against $748,367.40 in April. New orders booked in May were valued at $1,456,541.80 against $1,193,647.85 in April. Unfilled business was valued at $4,785,745.75 at the end of May compared with $4,586,663.35 at the end of April.

CONSTRUCTION *and* ENTERPRISE

Concise Timely Business Building Opportunities from Field of Industry

North Atlantic

EAST HAMPTON, CONN.—New England Water Light & Power association, Hospital Trust building, Providence, R. I., is said to have plans for constructing a power plant here costing about $40,000.

ATTLEBORO, MASS.—Attleboro Steam & Electric Co., 24 South Main street, has awarded contract for a power house to E. P. Pineo, 58 Hawthorne street. (Noted March 28.)

CAMBRIDGE, MASS.—J. W. Greer Co., manufacturer of confectionery machinery, etc., is said to have plans for a 2-story plant addition.

FALL RIVER, MASS.—W. E. Fawcett, 1437 Robeson street, plans building a 1-story service and repair garage to cost about $40,000. E. M. Corbett, 70 Bedford street, is architect.

LYNN, MASS.—Northern Engine Lubricator Corp., 497 Union street, recently incorporated, advises it will manufacture automotive accessories, but has not decided on production methods. (Noted June 20.)

NORTH DIGHTON, MASS.—North Dighton Stove Co., H. H. Lincoln president, is said to have plans for rebuilding its plant recently damaged by fire.

JERSEY CITY, N. J.—Brunswick Laundry Co. Inc., 222 Tonnele avenue, is having bids taken for a 1-story boiler house, 85 x 100 feet, by P. Simeone & Co. Inc., 22 Journal square, architects.

JERSEY CITY, N. J.—Pennsylvania Dock & Warehouse Co., subsidiary of the Pennsylvania railroad, has completed plans for a cold storage plant and warehouse development here, the first unit of several to be constructed. Estimated cost about $600,000.

NEWARK, N. J.—New York & New Jersey Lubricant Co., 292 Madison avenue, New York, has purchased a 7-acre tract on Lister avenue and will build a plant, according to William B. Glacken president.

NEWARK, N. J.—Capital Chain Co. has leased property at 11-15 Dickerson street and 68-72 Jay street. The property includes a 4-story building and several corrugated iron structures.

PLAINFIELD, N. J.—Common council, city hall, has plans for construction of an incinerator plant. Estimated to cost about $175,000.

BUFFALO—Buffalo city hospital, care board of managers, is receiving bids for construction of a group of buildings including a power plant. F. J. & W. A. Kidd, 524 Franklin street, are architects.

ELMIRA, N. Y.—E. J. Lazarus and associates, are said to have plans for constructing an ice and cold storage plant here. Estimated cost about $200,000.

NEW YORK—Art Steel Co., 401 East Twenty-third street, manufacturer of metal boxes, etc., is said to have plans for constructing a plant addition costing about $250,000.

NEW YORK—New York Edison Co., 130 East Fifteenth street, has awarded contract for a power plant on East Fourteenth street to the Kenn-Well Contracting Co., 45 East Seventeenth street.

ROCHESTER, N. Y.—Rochester Packing Co. has plans for a refrigeration plant and boiler house as part of plant improvements. Henschien & McLaren, 1637 Prairie avenue, Chicago, are architects and engineers.

SYRACUSE, N. Y.—Crouse Hinds Co., Wolf and Seventh streets, manufacturer of anchors, plans installing power equipment in plant addition. Gaggin & Gaggin, Syracuse, are architects.

UTICA, N. Y.—Shenandoa Rayon Corp. is taking bids for a boiler house and turbine room. W. E. S. Dyer, Land Title building, Philadelphia, is engineer.

COATESVILLE, PA.—Coatesville Boiler Works Co. is reported to have plans for construction of a riveting plant.

PHILADELPHIA—Hess-Bright Mfg. Co., Front street and Erie avenue, manufacturer of ball bearings, has plans for a 2-story and basement addition. Private plans.

PHILADELPHIA—Philadelphia Felt Co., Wingohocking and O streets is having plans prepared for a 1-story boiler plant addition. A. C. Wood, 1411 Walnut street, is architect and engineer.

PITTSBURGH—Equitable Gas Co., 435 Sixth avenue, has purchased a site containing about 50,000 square feet, and plans construction of a central plant. Estimated cost of improvement about $250,000.

READING, PA.—Empire Steel Castings Inc., through J. E. Horton, advises it has an extension under construction to its foundry. (Noted June 27.)

East Central

BENSENVILLE, ILL.—Willis Motor Corp., First avenue and Main street, has awarded contract for construction of a 1-story plant, 60 x 1600 feet, to the Continental Construction Co., 155 North Clark street, Chicago. (Noted May 30.)

BURLINGTON, ILL.—City has plans for waterworks improvements including power plant equipment, tank on tower and pumping equipment totaling about $300,000. Burns & McDonnell Engineering Co., Interstate building, Kansas City, Mo., are engineers.

CHICAGO—C. H. Hanson Co., 178 North Clark street, manufacturer of badges, checks, etc., has awarded contract for an addition to Seipp & Lonergan, 203 North Wabash avenue.

CICERO, ILL.—Ostrander-Seymour Co., manufacturer of printing machinery, has awarded contract for a 1-story plant addition to G. P. Cullen, 2940 West Lake street, Chicago.

SPRINGFIELD, ILL.—City is taking bids for new boilers, coal and ash handling equipment, etc. Estimated cost about $100,000. (Noted May 9.)

ANDERSON, IND.—Anderson Tool & Die Co., Delaware and Twenty-fourth streets, is reported to have taken over a plant building for expansion purposes.

BLOOMINGTON, IND.—City is said to have plans for construction of a waterworks. Burns & McDonnell Engineering Co., Interstate building, Kansas City, Mo., is engineer.

EAST CHICAGO, IND.—George B. Limbert & Co., 556 Fulton street, Chicago, manufacturer of pipe fittings, etc., has awarded contract for plant improvements to H. B. Olney, 1200 East Chicago avenue, East Chicago, Ind. (Noted June 20.)

HAMMOND, IND.—Stauffer Chemical Co., 3730 South St. Louis avenue, Chicago, will soon award contract for a sulphuric acid plant to be constructed on its property here. Estimated cost about $1,000,000.

INDIANAPOLIS—W. H. Clark has awarded contract for a 2-story machine shop and garage, 76 x 190 feet, to the A. V. Stackhouse Co., 2611 Cornell avenue. Estimated to cost about $50,000.

INDIANAPOLIS—Indiana university hospital has awarded contract for a building including a power plant to Krebay Construction Co., New

City Trust building. Estimated cost about $150,000.

MICHIGAN CITY, IND.—C. A. Dunham Co., 450 East Ohio street, Chicago, manufacturer of heating apparatus, has awarded contract for a 1-story plant, 350 x 350 feet, to Tonn & Blank, Michigan City. (Noted May 2.)

ADRIAN, MICH.—American Show Case Mfg. Co., 5235 Grand River avenue, Detroit, will rebuild its plant here, recently damaged by fire, according to A. J. Copeland treasurer.

ADRIAN, MICH.—Titan Electric Co., Butler, Ind., manufacturer of electric motors, generators, etc., has purchased a plant building and will move here next month. W. F. Roberts is president.

SPARTA, MICH.—Sparta Foundry Co. will add two units to its plant, also increase the floor space from 80,000 to 100,000 square feet, according to Randall W. Harper director. Estimated cost will be about $100,000.

JACKSON, MICH.—International Aircraft Co. of Michigan, recently formed, has purchased the assets of the International Aircraft Co. of Ohio, and plans are being completed for building a plant at the municipal airport here. T. P. Funk, chairman of the board of the Automotive Fan & Bearing Co., Jackson, is president.

KALAMAZOO, MICH.—Ramisch Tool & Die Co., recently incorporated, through C. T. Ramisch, advises it will rent a plant for the present. Some equipment has been purchased, but it will buy more. (Noted June 27.)

MORENCI, MICH.—Parker Rust-Proof Co., 2177 East Milwaukee avenue, Detroit, has started construction of an addition to its plant here.

OWOSSO, MICH.—Weatherproof Body Corp., Corunna, Mich., has purchased the plant of the former Field Body Corp. This plant will give the new owners about 200,000 square feet of additional floor space. Machinery must be installed, as well as dry kilns and repairs to existing machinery made before the plant can go into production, according to E. C. Morine president.

AKRON, O.—Northern Ohio Power & Light Co., Akron, is constructing an addition to its centralized steam plant. Estimated cost about $400,000.

CLEVELAND—Cleveland Electric Illuminating Co., Illuminating building, has awarded contract for a substation at 7905 Union avenue, to the Sam W. Emerson Co., 1836 Euclid avenue. Estimated cost about $190,000.

CLEVELAND—W. H. Hatch, architect, 562 Hippodrome annex building, closed bids for a 1-story plant addition, 150 x 180 feet, for the Reliance Electric & Engineering Co., 1088 Ivanhoe road.

CLEVELAND—Cleveland Chain & Mfg. Co., Stop 3, Bedford line, has awarded a number of contracts for a 1-story plant addition, 40 x 400 feet. An office building, 34 x 60 feet, is also being constructed.

CLEVELAND—McIntosh & Merrell Machine Co., recently incorporated to engage in a general machine shop and jobbing business, has taken space at 4909 Luther avenue. Equipment is to be purchased, according to A. T. Merrell.

COLUMBUS, O.—Council has authorized board of purchase to advertise for bids on machinery and equipment for the municipal electric light plant. The machinery includes a three phase 60-cycle condensing generator, generator air-cooler, surface condenser, dual drive circulating pump, two condensate pumps and an air ejector.

ELYRIA, O.—Elyria Belting & Machinery Co., A. A. Altfield president, advises it has awarded contract for a machine shop and warehouse containing 15,000 square feet to John Kaiser & Bros. Co., Elyria.

TOLEDO, O.—Union Carbide & Carbon Corp., 30 East Forty-second street, New York, plans construction of a plant here. Estimated cost about $150,000. Private plans.

FULTON, WIS.—Wisconsin Power & Light Co., Madison, Wis., plans building a hydro generator plant here, also one at Rockton, Ill.

KENOSHA, WIS.—Nash Motors Co. has been granted a permit to build a 1-story addition, 42 x 145 feet, to its foundry on Thirtieth avenue.

MILWAUKEE—Nordberg Mfg. Co. is about to award contracts for a brick and steel erection shop, 1-story, 95 x 140 feet, at Oklahoma and Chase avenues.

MILWAUKEE—Wrought Washer Mfg. Co., 46 South Bay street, is awarding contracts for a 2-story brick and mill constructed plant addition, 75 x 140 feet. Charles H. Disch is vice president.

MILWAUKEE—Bentley Bros. Inc., 808 South Pierce street, have taken the contract to build a 1-story plant and warehouse, 100 x 172 and 40 x 72 feet, for the National Radiator Corp., 124 Jefferson street, on a new site at Twenty-first street and St. Paul avenue.

MILWAUKEE—With a bid of $100,900, Pachloski & Doligalski, 448 Mitchell street, are low bidders for the construction of the proposed new laboratory and administration building for the metropolitan sewerage commission of Milwaukee at the sewage disposal plant on Jones island.

MILWAUKEE—Miami Engineering Co., Dayton, O., which recently opened a designing branch for tools, dies, plant lay-outs, etc., in the Commerce building here, is planning to establish a plant for the manufacture of special machinery. No details are available as yet. A. V. Regan is Milwaukee manager.

MILWAUKEE—Chicago, Milwaukee, St. Paul & Pacific railroad has awarded contract for constructing an addition, 200 x 1000 feet, to the Foundation Co., 120 Liberty street, New York. When completed the West Milwaukee shops will be the largest locomotive and car repair unit of the system. Estimated cost about $1,000,000.

MILWAUKEE—Magnetic Mfg. Co., manufacturer of magnetic separators and special equipments, through R. N. Stearns advises it is having plans prepared for a 60-foot plant addition costing about $30,000 with equipment. A number of machine tools will be included in the expansion program.

OSHKOSH, WIS.—Bell Machine Co., 35 Jackson street, will build a 2-story fireproof shop addition, 50 x 85 feet, to be ready about Sept. 1 or 15.

West Central

BURLINGTON, IOWA—Burlington Basket Co., recently damaged by fire, plans to rebuild. Power equipment will be included. Estimated loss over $100,000.

MINNEAPOLIS—Flour City Ornamental Iron Co., recently consolidated with the General Bronze Corp. of New York, is having plans prepared for plant expansion totaling about $500,000. Work is expected to start soon, according to Eugene Tetzlaff president.

COLUMBIA, MO.—City, care J. S. Bicknell, clerk, plans power plant addition including improvements to boiler and engine room. Burns & McConnell Engineering Co., Interstate building, Kansas City, Mo., is consulting engineer.

KANSAS CITY, MO.—Kansas City Car Co., recently incorporated, is reported to have purchased the plant of the Mid-Continent Tank Car Co., and will spend $50,000 for improvements and additional equipment.

ST. LOUIS—Gardner Motor Co., Main and Rutgers streets, plans spending about $2,500,000 on expansions for building airplanes, and two new makes of automobiles.

ST. LOUIS—Washington University School of Medicine, 602 South Euclid avenue, plans construction of a hospital including a steam heating system. Jamieson & Spearl, Arcade building, St. Louis, are architects.

CHADRON, NEBR.—R. Y. Lisco, Laramie, Wyo., is contemplating constructing an artificial gas plant here costing about $60,000.

FALLS CITY, NEBR.—Missouri Pacific railroad, St. Louis, has made an appropriation for rebuilding its power plant here. Work will start soon.

WILLISTON, N. D.—The local power plant of the Montana-Dakota Power Co. was recently badly damaged by fire. Fred K. Leinsorge, manager, estimated damage about $75,000.

HOT SPRINGS, S. D.—Soldiers home, I. L. Adams secretary of the board of managers, Redfield, S. D., is taking bids for a 1-story boiler plant. Estimated cost about $65,000.

RAPID CITY, S. D.—Howorth Machine Co., of this city and Hogarth & Son Inc., Deadwood, S. D., have consolidated and will establish a machine shop in Rapid City, costing about $60,000. A foundry will be added later.

Western States

GLENDALE, Calif.—Vortex Wing Corp., recently incorporated to manufacture airplane

devices, is having plans prepared for a 1-story building, 60 x 82 feet. C. J. Weyl, 6536 Sunset boulevard, Los Angeles, is architect for the project.

LONG BEACH, CALIF.—Proctor & Gamble, Cincinnati, is said to have plans for installing power equipment in proposed plant to be built on recently acquired property here. A boiler house is also planned.

SEATTLE—Troyer-Fox Mfg. Co., 601 Myrtle street, manufacturer of cannery and can making machines, subsidiary of Continental Can Co., 1 Pershing square, New York, will build a plant addition, 80 x 100 feet.

Southern States

SAVANNAH, GA.—Pan American Petroleum & Transport Co., 120 Broadway, New York, plans through a subsidiary to construct an oil refining plant here. Estimated to cost about $1,250,000.

ALVA, OKLA.—Oklahoma Gas & Electric Co., Oklahoma City, Okla., has plans for improvements to its power plant here, including equipment for increased output.

KINGSPORT, TENN.—Tennessee Eastman Corp. will start work at once on a plant addition. A power house with steam and electric units will be included.

BROWNSVILLE, TEX.—Pan-American Airways, Miami, Fla., is reported to have leased the municipal airport here to be used as the northern terminal of the Mexican Aviation Co. Plans call for improvements including a shop building, 120 x 150 feet, and the installation of new equipment.

Canada

EAST CALGARY, ALTA.—Dominion Bridge Co. has awarded general contract to Bennett & White Construction Co. Ltd., 1116 Ninth avenue, Calgary, for the erection of a structural steel fabricating plant. (Noted May 16.)

LADNER, B. C.—Plans are being prepared for addition to waterworks plant and system here to cost $325,000. N. A. McDiarmid is clerk.

HALIFAX, N. S.—William Collins & Son, Barrington street, will start work immediately on the erection of a 2-story machine shop to cost $15,000. The general contract has been let to Emile Bianco, 1 Kane place.

BELLEVILLE, ONT.—Alemite Products of Canada Ltd. has awarded contract to the W. H. Patterson Construction Co., Patterson block, for the erection of a 2-story plant to cost $60,000.

CHATHAM, ONT.—Carling Breweries Ltd., London, Ont., plans to build a 3-story addition, 150 x 200 feet, including a boiler house. Estimated cost about $250,000.

CHATHAM, ONT.—Hayes Wheel & Forgings Ltd. has started work on a $500,000 plant addition, 180 x 400 feet. Masonry and brick work contract has been awarded. Other contracts to be let at an early date. Work is being done under the supervision of the owners. (Noted May 16.)

CHIPPEWA, ONT.—Work will be started immediately on the erection of a 1-story brick plant addition for the Canadian Ohio Brass Co. Ltd., for which Smith Bros., 1740 Ellen avenue, have the general contract.

TORONTO, ONT.—Preliminary work has been started on an addition to the plant of the C. A. Dunham Co., Davenport road and Primrose avenue, manufacturer of steam heating and power plant equipment. Plans call for the erection of a 3-story plant addition, 40 x 50 feet, brick and steel construction, and a new boiler house 40 x 50 feet.

TORONTO, ONT.—Toronto Hydroelectric System, Yonge street, as an extensive construction program underway for the city involving an expenditure of $6,500,000. The work will include the building of new substations, service and cluding station-type transformers and equip- street lighting equipment, station equipment, in- ment. For distribution plant and equipment to provide for increasing load, $1,670,000 will be spent.

WATERLOO, ONT.—Public utilities commission is contemplating remodeling waterworks plant and installing emergency equipment. George Grosz is architect.

WHEATLEY, ONT.—The ratepayers authorized the expenditure of $84,000 for the installation of waterworks plant here. Bids for construction work and equipment will be called soon. A. W. Connor & Co., Metropolitan building, Toronto, Ont., is engineer.

WINDSOR, ONT.—Champion Spark Plug Co. has awarded contract for a plant addition to John V. Gray Construction Co., Bartlett building, Windsor. (Noted June 6.)

MONTREAL, QUE.—Canadian National Railways proposes to spend approximately $50,000,000 on extensions and improvements to terminal facilities here. The work will include the construction of an engine house.

MONTREAL, QUE.—Canadian Gas & Equipment Co. Ltd. has awarded general contract to John MacGregor, 1410 Stanley street, and the steel contract to the Dominion Bridge Co., Lachine, Que., for the erection of a 2-story plant to cost $20,000.

ST. JOHNS, QUE.—Hart Battery Co. has awarded general contract to Walter G. Hunt & Co., 1405 Bishop street, for the erection of two plant buildings, one story each, to cost $45,000.

KERROBERT, SASK.—Canadian Utilities Ltd., Calgary, Alta., proposes to build a power plant here.

MELVILLE, SASK.—Bids are being received by consulting engineers, Underwood & McLellan, Saskatoon, Sask., for the construction of waterworks pumping plant, sewage disposal plant, etc., for the town council.

MELVILLE, SASK.—Canadian National Railways will rebuild immediately the car shops that were recently damaged by fire.

REGINA, SASK.—W. D. Beath & Sons Ltd., Toronto, Ont., has awarded general contract to the Poole Construction Co., for the erection of a 1-story, brick and steel construction factory here to cost $75,000. (Noted June 6.)

Recent Incorporations

CHICAGO—Quaker Mfg. Co., 215 North Michigan avenue, has been incorporated with $225,000 preferred and 15,000 shares of no par stock to manufacture and deal in heating and ventilating equipment, by S. R. Barnett.

CHICAGO—Rauland Corp., 2224 North Kedzie avenue, has been incorporated with 20,000 shares of no par stock to manufacture and deal in electrical and mechanical appliances, by Frederick W. Flott.

CHICAGO—Mohawk Equipment Corp., Suite 637, 80 East Jackson boulevard, has been incorporated with 7000 shares of no par stock to manufacture and deal in railroad supplies and equipment by H. H. Grece.

CHICAGO—American Steel Container Co., 3140 West Fifty-first street, has been incorporated with $20,000 capital to manufacture and sell containers, by James B. Norwood.

GRANITE CITY, ILL.—Krug Aircraft Engine Corp., 1847 Edison street, has been incorporated with $6000 capital to manufacture and deal in internal combustion engines, by Robert E. Krug.

WAUKEGAN, ILL.—Lasley Turbine Motor Co., 214 West Washington street, has been incorporated with $50,000 capital to manufacture and deal in motors, parts, tools, generators, etc., by R. E. Lasley.

BOSTON—Progressive Rotary Washing Machine Inc. has been incorporated with $200,000 capital to manufacture and deal in washing machines. Henry Ollerhead, 144 Walworth street, Roslindale, Mass., is president.

BATTLE CREEK, MICH.—Burns Foundry Inc. has been incorporated with $20,000 capital.

DETROIT—O & S Bearing Co., 303 South Artillery street, has been incorporated with 56,000 shares of no par stock to manufacture and deal in automotive equipment.

LANSING, MICH.—Michigan Aero Engine

Corp. has been incorporated to manufacture airplane engines. Hugo B. Lundberg, president of the Michigan Screw Co., South Hosmer street, Lansing, is president of the new company.

MUSKEGON HEIGHTS, MICH.—Desmond Mfg. Co. has been incorporated with 1000 shares of no par stock to manufacture and deal in lawn sprinklers.

CAMDEN, N. J.—Protective Device Co., 1224 Haddon avenue, has been incorporated with $100,000 capital to manufacture metal devices, by Jacob Dutkin.

JERSEY CITY, N. J.—Paragon Motors Inc. has been incorporated with 200 shares of common stock to manufacture airships, by the Corporation Trust Co., 15 Exchange place, Jersey City.

NEWARK, N. J.—Radio Tube Products Co. has been incorporated with $100,000 capital to manufacture radio tubes, by Arthur R. Lewis, 20 Branford place, Newark.

BROOKLYN, N. Y.—Albanese Metal Work Inc. has been incorporated with $10,000 capital to manufacture tables, cabinets and metallic materials, by Joseph Albanese, 1221 Ocean Parkway, Brooklyn.

BROOKLYN, N. Y.—Weiner Iron Works Inc. has been incorporated with 100 shares of no par stock to engage in general iron working business, by Abraham Weiner, 259 Livonia avenue, Brooklyn.

GLOVERSVILLE, N. Y.—Real Roofers & Sheet Metal Workers Inc. has been incorporated with $5000 capital, by Leonard Gugenberger, 86 Third street.

NEW YORK—Safety Bright Light Bumper Corp. of New York has been incorporated with $100,000 capital, by D. M. Neuberger, 154 Nassau street, New York.

NEW YORK—Century Lighting Equipment Corp. has been incorporated with $26,000 capital to operate a machine shop, by S. Levy, 475 Fifth avenue, New York.

OYSTER BAY, N. Y.—South Shore Construction Co. has been incorporated with $20,000 capital, by Barsha & Meadow, 122 East Forty-second street, New York.

FOSTORIA, O.—Fostoria Pressed Steel Corp. has been incorporated with 40,000 shares of no par stock, by Paul J. Bickel.

EASTON, PA.—Easton Chromium Plating Co. has been incorporated with $6000 capital to do all kinds of plating, by Henry L. Michler, 134 North Third street.

HANOVER, PA.—Haco Steel Corp. has been incorporated with $100,000 capital to manufacture metal alloys, steel and various articles, by J. W. Gitt, Hanover.

LANCASTER, PA.—Bro-Dun Metal Products Co. has been incorporated with $25,000 capital to manufacture and sell castings and kindred metal products, by Jerome S. Dunie, North West End and McKinley avenues, Lancaster.

PHILADELPHIA—Dailey-Lockwood Inc. has been incorporated with $15,000 capital to manufacture metal products of every description, by H. P. Dailey, 5320 North Twelfth street.

PHILADELPHIA—Speciality Metal Products Co. has been incorporated with $10,000 capital, by Herbert Hendricks, 126 East Huntington street.

PHILADELPHIA—Vaporoiler Co. has been incorporated with $5000 capital to manufacture automotive specialties, mechanical devices, etc., by J. L. DeHart, 317 Price avenue, Narbeth, Pa.

PHILADELPHIA—M. J. Brown Mfg. Co. has been incorporated with $20,000 capital to manufacture tools and all kinds of mechanical devices, by Michael J. Brown, 940 North Sixty-third street.

PHILADELPHIA—American Combustion & Engineering Co. has been incorporated with $45,000 capital to manufacture and deal in furnaces, ventilating and refrigerating equipment, devices and appliances, by Seymour M. Whitney, 6653 Lawnton avenue.

PITTSBURGH—Romeson Mfg. Corp. has been incorporated with $10,000 capital to manufacture and repair products made from iron, steel, copper, etc., by Robert Munroe III, 5629 Elgin avenue.

READING, PA.—Empire Steel Castings Inc. has been incorporated with $5000 capital to manufacture and sell patterns, forgings, castings, etc., by J. E. Horton, 146 North Eleventh street.

ST. MARYS, PA.—Speer Resistor Corp. has been incorporated with $50,000 capital to manufacture and deal in all kinds of electrical equipment and appliances, including metal specialties, by Dudley H. Miller.

APPLETON, WIS.—Fox River Wire Cloth Works Inc. has been incorporated with $50,000 capital to manufacture screens, wire cloth and other paper mill supplies, by L. L. Elsner, W. F. Elner and T. A. Elsner.

MILWAUKEE—Sliding Clutch Mfg. Co. has been incorporated to manufacture automotive units and parts, by Jacob Weisling, 1830 Vliet street.

MILWAUKEE—Clutch Starter Corp. has been incorporated with $50,000 capital to manufacture automotive devoces, machinery, tools, etc., by P. Knudsen, B. Aikman and G. A. Wegman.

HAGERSVILLE, ONT.—Bell Construction Ltd. has been incorporated to carry on the business of general contractor and engineer, with a capital of $100,000, by William R. West, Howard A. Harrison, Salter A. Hayden, 315 St. Clements street, Toronto, Ont.

TORONTO, ONT.—Chrisbert Builders Ltd. has been incorporated to carry on the business as builder and contractor and manufacturer of builders' materials with $40,000 capital, by Wilfred J. P. Jenner, Nixon T. Berry and Frank C. Tesky, 171 Yonge street, Toronto.

WINDSOR, ONT.—Windsor Brass Works Ltd. has been incorporated to manufacture and deal in iron, steel and other metals, with $40,000 capital, by David A. Croll, William E. Kell, Louis J. Brody and others, all of Windsor.

New Trade Publications

REFRACTORIES—Discussion of refractories for power plants forms the subject matter of a booklet published by the Chas. Taylor Sons Co., Cincinnati. It contains concise technical and practical information on fire brick for boiler settings.

ROLLER BEARINGS—Saying it with pictures is accomplished by a gravure publication by the Hyatt Roller Bearing Co., division of General Motors. Railroads, agriculture and industry contribute scenes containing equipment running on the company's bearings.

STEEL CASTINGS—Lebanon Steel Foundry, Lebanon, Pa., shows in a current bulletin how castings from its foundry aid in keeping the golf course in perfect condition. Light castings on mowers prevent damage and reduce costs.

NICKEL STEELS—International Nickel Co., New York, has issued a bulletin devoted to discussion of the use of nickel steel in the new type of locomotives built for the Canadian Pacific railroad. Technical and economic features made possible by nickel steel are described.

AIR COMPRESSORS—Application of air to many tasks is described in a bulletin by Allen Air Appliance Co. Inc., New York. Compressors manufactured by this company are described and illustrated and various diagrams show performance. Tables give data and pressure conversions. Vacuum cleaner equipment, exhausters and conveying by pneumatic means are also given a place.

ELECTRIC CONTROLLERS—Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., describes in a bulletin its new line of reversing drum controllers for wound rotor induction motors. These controllers embody new features, including reversible contact segments, self-aligning fingers, ball and roller bearings, interchangeable operating heads and compact overall construction.

TRAMRAIL—Material handling in the foundry by means of its tramrail installations is the subject of a current bulletin by the Cleveland Electric Tramrail division of the Cleveland Crane & Engineering Co., Wickliffe, O. Illustrations present methods for handling materials into and from stock and shows economy of space by movement overhead, requiring no aisles.

AVIATION STRUCTURES—A third edition of its book on airports and aviation buildings has been issued by the Austin Co., Cleveland, engineer and builder. Increasing production schedules of aircraft and accessories have made necessary the straight-line production methods used in other departments of industry. To meet this need the company has advanced its designs. The booklet is amply illustrated to show the ground end of the industry, airports, hangars, passenger depots and aircraft factories.

INDUSTRIAL X-RAYS—Eastman Kodak Co., Rochester, N. Y., has published a booklet devoted to the use of X-rays in industry, a pioneer presentation of an increasingly important aid to inspection of materials and products. Adaptation of this means to determination of defects has been progressing and the booklet indicates how much advance has been made. Proper methods for its use and a presentation of the theory and use of the rays form most of the book. Other uses for radiography are expected to be stimulated by study of this booklet.

Pipe and Tube Prices—Plate Extras

Steel Pipe

Pittsburgh and Lorain basing discounts, jobber's carloads.

Evanston, Ill., and Indiana Harbor, Ind., take differential 2 points less discount.

Chicago takes differential 2½ points less than Pittsburgh-Lorain basis.

Butt Weld

	Black	Galvanized
⅛-inch	45	19½
¼ and ⅜-inch	51	25½
½-inch	56	42½
¾-inch	60	48½
1 to 3-inch	62	50½

Lap Weld

2-inch	55	43½
2½ to 6-inch	59	47½
7 to 8-inch	56	43½
9 and 10-inch	54	41½
11 and 12-inch	53	40½

REAMED AND DRIFTED

Butt Weld

1 to 3-inch	60	48½

Lap Weld

2-inch	53	41½
2½ to 6-inch	57	45½

EXTRA STRONG—PLAIN ENDS

Butt Weld

⅛-inch	41	24½
¼ and ⅜-inch	47	30½
½-inch	53	42½
¾-inch	58	47½
1 to 1½-inch	60	49½
2 to 3-inch	61	50½

Lap Weld

2-inch	53	42½
2½ to 4-inch	57	46½
4½ to 6-inch	56	45½
7 to 8-inch	52	39½
9 and 10-inch	45	32½
11 and 12-inch	44	31½

DOUBLE EXTRA STRONG

Butt Weld

½-inch	42	32½
¾ to 1½-inch	45	35½
2 to 2½-inch	47	37½

To large jobbers these discounts are increased by 1 point and two supplementary discounts of 5 per cent on black, and 1½ points and two supplementary discounts of 5 per cent on galvanized.

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers' carloads. Individual quotations made on delivered basis.

THREADS AND COUPLING

Butt Weld

	Black	Galv.
¼ and ⅜-inch	+11	+36
½-inch	23	5
¾-inch	28	11
1 and 1¼-inch	31	15
1½ and 2-inch	35	18

Lap Weld

1¼ and 1½-inch	Upon application	
2-inch	23	9
2½ to 3½-inch	28	12
4 to 6-inch	30	17
7 and 8-inch	29	16
9 to 12-inch	26	11

REAMED AND DRIFTED

2-inch to 6-inch—Two points less than above

EXTRA STRONG, PLAIN ENDS

¼ and ⅜-inch	+13	+48
½-inch	23	7
¾-inch	28	12
1 to 2-inch	34	18

Lap Weld

2-inch	29	13
2½ to 4-inch	34	20
4½ to 6-inch	33	19
7 and 8-inch	31	17
9 to 12-inch	21	8

DOUBLE EXTRA STRONG

Butt Weld

½-inch	+47½	+59½
¾-inch	+28	+40
1-inch	+34	+46
1¼-inch	+28	+40
1½-inch	+27	+39

Lap Weld

2 and 2½-inch	+13	+25
3 to 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	.....

Jobbers obtain additional preferential discounts of 1, 5 and 2½ on black and galvanized wrought iron pipe.

On extra or double extra strong pipe fitted with threads and couplings basing discount lowered 5 points from plain end price. Fitted with threads only, basing discount lowered 3 points for random lengths.

Boiler Tubes

Pittsburgh carload discounts

STEEL (Lap Weld)

2 and 2¼-inch	40 off
2½ and 2¾-inch	48 off
3-inch	54 off
3¼ to 3¾-inch	56 off
4-inch	59 off
4½ to 6-inch	48 off

Subject to two 5 per cent discounts on full carload shipments. On less than 10,000 pounds, base discount reduced 6 points and one 5 per cent allowed. On 10,000 pounds to carload, base discount reduced 4 points and two 5 per cents allowed.

CHARCOAL IRON

1½-inch	1 off
1¾-inch	8 off
2 and 2¼-inch	13 off
2½ and 2¾-inch	16 off
3-inch	17 off
3¼ to 3½-inch	18 off
4-inch	20 off
4½-inch	21 off

Subject to 10 per cent discount on full carload lots. On less than 10,000 pounds, base discount reduced 2 points and no preferential allowed. On 10,000 pounds to carload, 5 per cent preferential allowed.

SEAMLESS COLD DRAWN

1-inch	63 off
1¼ and 1½-inch	55 off
1¾-inch	39 off
2 and 2¼-inch	34 off
2½ and 2¾-inch	42 off
3-inch	48 off
3¼ and 3½-inch	50 off
4-inch	53 off
4½, 5 and 6-inch	42 off

SEAMLESS HOT ROLLED

1¾-inch	39 off
2 and 2¼-inch	40 off
2½ and 2¾-inch	48 off
3-inch	54 off
3¼ and 3½-inch	56 off
4-inch	59 off
4½, 5 and 6-inch	48 off

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed.

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING

Base Discounts on New List July 1, 1925

Carbon 0.10 to 0.30 per cent.....50 to 55 off
Carbon 0.30 to 0.40 per cent.....45 to 50 off

Plus usual extras for forming and for long lengths over 18 feet and for commercially exact lengths.

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES

Net prices per foot f.o.b. Pittsburgh

Outside diameter	Gage	Price
2-inch	12-gage	14¼c
2-inch	11-gage	15c
2-inch	10-gage	16c
2¼-inch	12-gage	16c
2¼-inch	11-gage	17c
2¼-inch	10-gage	18c
3-inch	7-gage	33c
5⅜-inch	9-gage	50c
5½-inch	9-gage	52c

Plus usual extras for forming and for lengths over 24 feet.

Plate Extras

BASE

Rectangular plates, tank steel or conforming to manufacturers' Standard Specifications for structural steel, date Nov. 24, 1922, or equivalent, ¼-inch thick and over on thinnest edge (except for ¼-inch or 72 inches wide when ordered to weight in pounds per square foot—see width and gage extras), 100 inches wide and under, down to but not including 6 inches wide, 5 feet 0 inches long up to published limit in length but not over 80 feet 0 inch, are base. Extras per pound for width or diameter.

All Plates Rectangular or Otherwise

¼-inch thick and heavier, but not less than 11 pounds per square foot, if ordered to weight.

Over 100 to and including 110 inches	.05c
Over 110 to and including 115 inches	.10c
Over 115 to and including 120 inches	.15c
Over 120 to and including 125 inches	.25c
Over 125 to and including 128 inches	.50c

Plates less than ¼-inch or lighter than 11 pounds per square foot.

Over 72 to and including 84 inches	.10c
Over 84 to and including 96 inches	.20c
Over 96 to and including 100 inches	.30c

Over 100 inches add .35c to width extras for plates ¼-inch thick and heavier.

GAGE

Plates Not Exceeding 72 Inches Wide

Plates less than ¼-inch gage, to and including $\frac{3}{16}$-inch; or lighter than 10.2 pounds per square foot, to and including 7.65 pounds square foot..... .20c

Plates Over 72 Inches Wide

Plates less than ¼-inch gage, to and including $\frac{3}{16}$-inch; or lighter than 11 pounds per square foot, to but not including 7.65 pounds square foot.... .20c

Plates ordered 7.65 pounds square foot .30c

QUALITIES

Pressing steel	.10c
Flange steel (boiler grade)	.15c
Ordinary firebox steel	.20c
Stillbottom steel	.30c
Locomotive firebox steel	.50c
Marine steel	1.50c
Hull materials subject to U. S. Navy Dept. specifications for medium or soft steel	.10c
High tensile hull steel subject to U. S. navy department or equivalent specifications	1.00c
Boiler steel subject to U. S. navy department specifications, classes A-B	1.50c
Hull plates to hull specifications, required to stand cold flanging, take extra for flange steel.	

Floor Plates

Checkered plates 1.75c

Checkered plates are not furnished to sketch and are rolled from "Stock Steel" only. No physical tests will be made on checkered plates.

INSPECTION

Mill inspection .....No extra

Charges for other inspection, such as Lloyd's or American bureau of shipping, will be made by inspection bureau direct to buyer.

CUTTING

LENGTH OR DIAMETER

All Plates, Rectangular or Otherwise

Five feet and over up to published limit of length, but not over 80 feet	No extra
Under 5 feet to 3 feet inclusive	.10c
Under 3 feet to 2 feet inclusive	.25c
Under 2 feet to 1 foot inclusive	.50c
Under 1 foot	1.55c
Over 80 feet to 100 feet inclusive	.10c

Over 100 feet add .25c plus .05c for every additional 2 feet or fraction thereof.

Regular Sketches

With not more than four straight cuts. (Including straight taper plates)

Additional extra ..... .10c

Irregular Sketches

With not more than four straight cuts. (Sketches cannot be sheared with re-entrant angles)

Additional extra ..... .20c